EVALUATION OF THE COMMERCIAL GROUNDFISH INTEGRATION PILOT PROGRAM IN BRITISH COLUMBIA

By

Tameezan Mawani

Royal Roads University

in partial fulfillment of the requirement for the degree of

MASTER OF ARTS in Environment and Management

We accept this thesis as conforming to the required standard

______________________________
Dr. Audrey Dallimore, Supervisor
Royal Roads University

______________________________
Dr. Lenore Newman, Graduate Committee Chair
Royal Roads University

______________________________
Dr. Anthony Boydell, MEM School Director
School of Environment and Sustainability

ROYAL ROADS UNIVERSITY
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Abstract

In 2006, the Minister of Fisheries and Oceans Canada (DFO) accepted an industry proposal called the Commercial Groundfish Integration Pilot Program (CGIPP), which integrated each of the seven commercial groundfish fisheries in British Columbia. The industry proposal, developed by the Commercial Industry Caucus (CIC), was the result of guiding principles developed by DFO that focused on the conservation of certain rockfish species on the Pacific Coast. If industry had not developed a plan, DFO would have developed an alternative fishing plan (AFP). This thesis evaluates whether DFO’s conservation objectives were met under the CGIPP and if there were any social and economic impacts. These same impacts are compared to what may have occurred under the AFP. The results of this thesis indicate that the CGIPP is a sustainable template for multi-species commercial fisheries—a first step in achieving an ecosystem-based approach to fisheries management.
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Chapter 1: Introduction

Opening Remarks

Historically, the seven commercial groundfish fisheries in British Columbia (BC) have been licenced and managed separately. As a consequence of management arrangements used, harvesters were not required to restrict their catch to only their target species. They were required to release (also known as discard) most of their incidental catch; the associated mortality, which was not fully monitored, raised conservation issues. To address these growing management problems, in 2003 Fisheries and Oceans Canada (DFO) established two additional stakeholder advisory groups to examine management options and develop a proposal to address these concerns. In 2006, based on stakeholder recommendations, DFO approved new groundfish management arrangements known as the Commercial Groundfish Integration Pilot Program (CGIPP). The new CGIPP included an inter-fleet reallocation system, a comprehensive catch monitoring system and wider application of quota management.

The purpose of this thesis is as follows:

- To evaluate whether the CGIPP has allowed DFO to meet its conservation objectives for Canada’s Pacific commercial groundfish resources,
- To determine if there were additional economic and social impacts as a result of the CGIPP and if so, identify these impacts,
- To examine the effectiveness of the two new institutional arrangements created by DFO that facilitated the development of the CGIPP.
There was incentive for industry to develop a proposal: if they failed to develop a plan to address DFO’s conservation concerns, DFO would implement its own alternative fishing plan (AFP). As such, this thesis will also describe the economic and social impacts that may have resulted if the AFP had been implemented. In addition, this thesis will explore whether the AFP might have adequately addressed DFO’s conservation objectives. This thesis provides what may have been a plausible AFP. Although there was no AFP developed by DFO, a plausible supposition can be made using the guiding principles as the framework.

Chapters 3 through 10 compile the results of this research, including relevant literature reviews. As a result of this thesis, a discussion of the lessons learned will be presented to guide other commercial fisheries facing similar conservation challenges. A lexicon of key terms is provided in Appendix A.

Context

It is generally agreed that fisheries management arrangements undertaken by governments worldwide have failed to meet stated conservation, economic and social objectives (Loucks, 2006; Grafton, 1996; Okey, 2002). Various hypotheses have been suggested for this management failure, including the use of ineffective regulatory management instruments (Grafton, 1996); an inappropriate focus on single species management, as opposed to ecosystem management (Sissenwine and Murawski, 2004); and the use of an inherently dysfunctional institutional framework for fisheries management decision-making (Townsend, 1995). The BC groundfish fisheries provide an example of these sustainable development challenges. Prior to 2006, the seven groundfish fisheries (trawl, sablefish, halibut, outside rockfish, inside rockfish, dogfish, and lingcod)
in BC were licenced and managed separately by DFO. The fleets in each fishery use different gear and fishing methods to target individual groundfish species or groups of groundfish species. In most cases, harvesters were not permitted to retain their incidental catch and therefore it was all released. The resulting mortality of this released catch raised conservation concerns, primarily with respect to rockfish species because all rockfish die when captured. The need for additional management restrictions to control incidental catches, in turn, raised economic viability and social concerns.

In 2003, DFO began to work with commercial groundfish harvesters and other parties to address management and sustainability issues in the commercial groundfish fisheries. As part of the process, two new stakeholder advisory groups, or co-management arrangements, were established: the Commercial Groundfish Integrated Advisory Committee (CGIAC) and the Commercial Industry Caucus (CIC). The CGIAC is a multi-sector advisory group, with representation from all commercial groundfish fleets, the recreational fishery, First Nations, coastal communities, and the environmental community. The CGIAC provides formal advice and recommendations to DFO on policy and operational matters that impact across commercial groundfish fisheries and between commercial groundfish fisheries and other sectors or resource users (Appendix B, CGIAC Terms of Reference).

The CIC, which consists of commercial representatives from each groundfish fishery, provides formal advice and recommendations to the CGIAC. Objectives of the CIC include sustainable use of the resource, greater self-reliance for resource users, and economic viability (Diamond Management Consulting Inc, 2005). In 2005, the CIC
submitted a Pilot Integration Proposal to the CGIAC for their comment. The proposal called for an integrated approach to managing the fishery:

1. An inter-fleet reallocation system that would enable harvesters to temporarily reallocate species among licence types so that each fleet could execute their fishery while reducing the need to release incidental catches.

2. A comprehensive catch-monitoring system for all fleets to account for all catches (including any catch released at sea) through 100% at-sea (electronic or observer) and dockside monitoring of fishing activities and landings.

3. Extension of individual transferable quota (ITQ) management systems, already well established in halibut, sablefish, and groundfish trawl fisheries, to all other groundfish fisheries, including inside and outside rockfish, lingcod, and dogfish.

In 2006, the Minister of Fisheries and Oceans approved these new management arrangements based on the CIC’s Pilot Integration Proposal for commercial Pacific groundfish fisheries. The three-year pilot now integrates the seven groundfish fisheries that had previously been managed separately. The groundfish initiative consists of two major elements: a change in co-management arrangements surrounding DFO’s stakeholder advisory framework and the introduction of new commercial management measures.

**Scope**

The focus of this thesis is on the commercial groundfish fisheries, particularly the hook and line and trap fisheries. These include the lingcod, dogfish, halibut, sablefish, inside rockfish, and outside rockfish fisheries. The trawl fishery, which is multi-species,
has, since 1997, operated under a fishing plan that addresses incidental catches. However, it is important to note that although this thesis excludes the trawl fishery, this fishing sector played a key role in the development of the CGIPP, given their experience with an integrated program. Trawl industry representatives actively participated in the CGIAC and CIC processes, as they too wanted to ensure the sustainable management of groundfish resources.

Additional aspects of the CGIPP, beyond the scope of this thesis, include the impacts of the program on First Nations for food, social, and ceremonial purposes as well as impacts on the recreational fishery. Insight on these issues can be found in a preliminary evaluation of the CGIPP conducted by Fraser and Associates (2008).

Chapter 2 of this thesis will describe the criteria that will be used to evaluate in the impacts of the CGIPP. Chapters 3 to 6 discuss the results of the research, and Chapters 7 to 11 give conclusions and recommendations for fisheries considering a similar approach to sustainable management.
Chapter 2: Research Methodology

This chapter provides the criteria that will be used in this thesis to determine whether the CGIPP has enabled DFO to meet its conservation objectives as well as to determine if there were additional economic and social impacts. This evaluation relies on identifying the impacts of the CGIPP relative to the potential impacts of the AFP, should it have been implemented. Comparing the impacts of the CGIPP to how the fishery had previously been managed is not relevant, because DFO clearly stated that status quo management was not an option. Lastly, the criteria to determine the effectiveness of the two new co-management arrangements described in the previous chapter, the CIC and CGIAC, will be outlined.

Although the primary groundfish management objectives, as reflected in DFO’s guiding principles, relate to conservation, both DFO and the CIC supports consideration of social and economic objectives. For example, DFO’s new Sustainable Fisheries Framework states that the primary goal is “… to ensure that Canada’s fisheries are environmentally sustainable, while supporting economic prosperity” (DFO, 2009d). The Framework states that fisheries management plans should incorporate socio-economic considerations. Similarly, one of the CIC objectives states that “the economic viability of the groundfish fisheries is maintained so that the industry can continue to provide economic benefits to Canada and generate jobs and incomes in BC’s coastal communities” (Diamond Management Inc, 2005). Dale (2001) defines sustainable development as a process involving the reconciliation of three imperatives: ecological, social, and economic. Each of these imperatives must be met, as they each are necessary and sufficient conditions for sustainable development. Dale states that it is
counterproductive to argue which is more fundamental, as they are each inextricably linked. The following outlines the criteria used here to evaluate each of the imperatives for the BC groundfish fisheries.

Conservation Impacts

Conservation concerns related to the serious decline in rockfish stocks were the impetus for DFO to develop the original guiding principles. This thesis examines to what extent the CGIPP achieved the conservation objectives and to what extent would the AFP have achieved them? To assess whether progress was made in addressing this rockfish conservation concern, these criteria were used in this thesis:

- Did the quality of rockfish data improve?
  - Is all rockfish mortality accounted for on a stock-specific basis?
  - Is the annual total stock-specific rockfish mortality within the scientifically prescribed TACs?
- Were there any additional improvements to the quality of data?
- Were there any additional conservation benefits from the program?

If fishery managers do not know total mortality of species, including those released at sea, it becomes problematic for them to be confident catches remain within scientifically prescribed TACs. As such, these criteria have been chosen because this information is the only tool available to fisheries managers to ensure catch remains sustainable. The above questions will be explored using data from DFO’s yearly catch summary reports.
Economic Impacts

To evaluate the economic impacts of the CGIPP, this thesis uses an asset valuation methodology – the value of a given asset is indicative of long term profitability in that industry. This methodology has been used to produce New Zealand’s *Fish Monetary Stock Account*, which presents a time series of asset values for New Zealand’s commercial fish resource based on quota values under a Quota Management System (Statistics New Zealand, 2008). Similarly, the *Handbook of National Accounting: Integrated Environmental and Economic Accounting for Fisheries* (FAO 2004), a framework developed by the United Nations for organizing economic and environmental information related to fisheries, indicates that when available, the market price, established by a trading mechanism such as ITQs, is the preferred method of valuation. The market price is consistent with the definition of value used in other handbooks and can be directly observed (FAO, 2004). An investigation of the New Zealand ITQ markets (for more than 33 species) showed that an increase in quota asset prices was consistent with increased profitability (Newell, R.G., Sanchirico, J.N., and Kerr, S., 2005); the same investigation indicated where costs would be expected to fall over time, for a specific fishery, if the asset prices were higher.

Common to all the literature on the subject is the definition used for the value of an asset. According to the *Handbook* the value of any asset is “… the sum of the discounted stream of net income, or resource rent, that it is expected to generate during its lifetime” (FAO 2004). Similarly, Mitchell (1971) defines the value of an asset as the “…net realizable value because this would approximate the present value of the future services expected to flow from the asset.” For the purpose of this thesis, “assets” will
include both commercial groundfish fishing licences and commercial groundfish quota (only quota that is permanently transferable). Within the commercial groundfish fisheries, competitive markets for quota and licences exist; therefore, the price of quota and licences should reflect the expected present value of future profits in the fisheries (Newell, R.G., Sanchirico, J.N., and Kerr, S., 2002).

Analyzing the trend of groundfish assets will reflect the expected profitability of the commercial groundfish fishery; therefore, undertaking a separate cost and earnings analysis to determine the economic impact of the CGIPP is unnecessary. For example, if one was considering investing in a company, the best indicator to determine profitability of the company would be the share value of the company’s stock. The value of a share of stock is a proxy for the company’s revenue, earnings, cash flow, etc. (Motley Fool Staff, 2008). Likewise, rather than analyzing each harvester’s costs and revenues, the trading prices for commercial groundfish licences and quota can be used to determine long term profitability of the fishery. Specifically, an economic evaluation focuses on the returns to licence holders. Price fluctuations within the quota market provide an important source of information on the expected profitability of fishing and, therefore, are key criterion for decisions taken by harvesters to enter, exit, expand, or contract individual fishing activities (Newell et al., 2002).

For the purpose of this thesis, asset values were derived from an annual report prepared by Stuart Nelson (2008a) on Commercial Fishing Licence, Vessel, and Quota Values for the west coast fishing fleet. This report helps DFO when purchasing commercial licences through the Allocation Transfer Program. Commissioned by DFO’s Treaty and Aboriginal Affairs branch to gauge the value of commercial assets each year
for commercial fisheries in BC, the report averages values for the year ending March 31st. An examination and analysis of the trend in asset values for both commercial groundfish licences and quota from 2004 to 2008 will be presented in this thesis. Data from 2003 is not included as no report was commissioned for that year.

**Social Impacts**

A comprehensive examination of the social impacts of the CGIPP is difficult due to the scarcity of data. The key social concerns that this thesis will address include fleet composition, fishing employment, and the impacts of the CGIPP on coastal communities of BC.

A preliminary review of the integration program, conducted in March 2008, included the issue of fleet composition. Results from this report coupled with data provided by DFO’s annual summary reports will be used in this thesis to identify impacts on the composition of the fleet. At the same time, DFO commissioned a report on the employment impacts of individual transferable quota (ITQ) fisheries in the Pacific. The use of ITQs constitutes a key difference between the CGIPP and the AFP. (ITQs will be discussed in more detail in Chapter 3.) As such, information from this report may provide insight into the possible unemployment impacts of the CGIPP. Undoubtedly, changes in fishing employment affect coastal communities, but in addition, this evaluation will also consider the impacts of the CGIPP on the processing sector. An examination of groundfish landings for two primary BC ports since the implementation of the CGIPP will also be analyzed. This section examines the possible social impacts that have occurred since the implementation of the CGIPP, compared to what might have transpired under the AFP.
Evaluation Criteria for Co-Management Arrangements

In attempting to involve stakeholders in the determination of management arrangements that would address DFO’s rockfish conservation concerns, DFO modified its existing groundfish co-management process through the addition of two new stakeholder advisory bodies, as described in the previous chapter. This section will provide a brief evaluation, based on the following criteria, of whether the new co-management arrangement framework was successful.

- Were the new co-management processes able to reach a consensus regarding new management arrangements needed to address DFO’s rockfish conservation problem and objectives?
- If yes, were the co-management body’s management recommendations accepted and implemented by DFO?
- If yes, did the new management recommendations successfully address DFO’s rockfish conservation concerns as well as the Department’s guiding principles?
Chapters 3–6: Results

Chapters 3–6 provide a literature review, analysis, and discussion that will provide the framework for the evaluation of the impacts of the CGIPP. Chapter 3 details why and how fisheries are managed worldwide and, more specifically, in BC.

Chapter 3: Fisheries Management 101

Why Do We Manage Fisheries?

Historically, the conventional wisdom has been that ocean fisheries were inexhaustible and unfettered access to the resource was acceptable. (The concept of unfettered access is often referred to as open access.) Take, for example, this quote by English biologist Thomas Henry Huxley (1883): "I believe that the cod fishery, the herring fishery, the pilchard fishery, the mackerel fishery, and probably all the great sea-fisheries are inexhaustible; that is to say that nothing we do seriously affects the numbers of fish." In the final analysis, Huxley’s assertion did not reign true. An increase in fishing effort resulted in more vessels and gear, larger vessels, improved fishing gear and technology, and additional crew. As fishing effort increased (more vessels and gear, larger vessels, improved fishing gear and technology, and additional crew) to satiate aspirations for higher profits, resource abundance declined and the sustainability of fish resources was jeopardized.

Fisheries resources were overexploited beginning about 40 decades ago as harvesters raced to catch more fish than their competitors, referred to as the race for fish. Dr. Peter H. Pearse stated in his 1982 report, Turning the Tide, that fisheries treated in an open access manner would lead to effects such as stock depletion, poor economic
performance, and instability. This necessitated global government intervention to impose regulations on who could fish, where, how, and when (Kaufmann, Geen, and Sen, 1999). New management arrangements were implemented by the Canadian government to ensure sustainability of fish resources in Canada, using various tools; these new arrangements are analyzed next.

How Do Governments Manage Fisheries?

Much debate surrounds the best tools to serve the purpose of managing common resource stocks. Generally speaking, there are two broad categories of management techniques or control measures that can be used in fisheries management: input controls and output controls. Input controls involve limiting the total amount of fishing effort, such as placing limits on such factors as the number of participants in a fishery and the type and amount of gear used (National Research Council, 1999).

Examples of input controls include limited entry licensing, time and area closures, gear restrictions, and licence retirement or buy back programs. There was a widely-held view in fisheries management that it was sufficient to merely control the inputs of fishers to effectively regulate fisheries, however, this view has now been abandoned (Grafton, Nelson and Turris, 2004). Growing evidence suggests that input controls have failed to meet conservation, economic and social objectives and as such, economists began to suggest and evaluate alternative management techniques (Squires, Kirkley and Tisdell, 1995).

An alternative management technique used by fisheries managers is output controls. Output controls attempt to directly control the amount of catch by a vessel or harvester, or the “outputs.” The two primary forms of output controls include the use of a
total allowable catch (TAC) and ITQs. The TAC is a management technique whereby the total output for a fishery is limited by placing a maximum weight or number of fish that can be harvested during a given time period (National Research Council, 1999). A TAC for a particular fishery may be further divided into individual, tradable shares of the total catch assigned to participants in the fishery, known as ITQs (Ward, Kirkley, Metzner, and Pascoe, 2004).

The problem that arises from both input and output controls is the inability to address incidental catches. For example, when a dogfish harvester puts his or her gear in the water to catch dogfish, inevitably other species of fish will be incidentally caught. For example, on one string there could be 20 dogfish, 10 halibut, 15 rockfish, 5 sablefish, and 2 lingcod. The only species permitted to be retained are dogfish and lingcod; the rest would be released. The incidental catch and release of species is a growing concern for many fisheries and in fact provided the impetus for the CGIPP. Fishery managers have, for many years, attempted to address issues such as incidental catches, the race for fish, and overcapitalization using various management techniques. Below is a brief description of the evolution of fisheries management within British Columbia.

The BC Experience

As mentioned previously, one form of input control includes limiting the number of licences permitted to participate in a fishery. This is referred to as licence limitation or limited entry licensing. This type of management technique was how fisheries management in BC began. Initially, vessels required a “C” licence (which was unlimited) to engage in commercial fishing for all species. In an attempt to curb fishing effort in the salmon fishery, the privilege to harvest salmon was removed from the “C” licence, and a
separate, limited entry “A” licence was created for salmon harvesting only. Although salmon was the first species to be removed from the “C” licence, other species continued to be drawn out due to concerns of overfishing and capacity growth. Several limited entry licences for individual species were established. The use of the licence limitation policy, however, was not effective on its own as a management technique in the halibut fishery, as demonstrated in the example below.

A closer look at the BC halibut fishery.

Pacific halibut was removed from the “C” licence in 1979, and 435 “L” licences were created that allowed for the retention of halibut when fishing. Although licence limitation restricts the number of participants in a fishery, it neither hinders the allowable catch per vessel nor does it address incidental catch. Halibut fisheries managers coupled licence limitation with a TAC in an attempt to limit the total catch in a given season. Once the TAC had been achieved the fishery would close. This management technique led to individual harvesters attempting to catch a larger share of the TAC. Harvesters invested in capital assets (larger vessels, more powerful engines, advanced gear, etc) to catch more fish in a shorter period of time. In addition, input controls such as gear and vessel restrictions were implemented, but harvesters continued to find ways of increasing their catching power.

Harvesters racing to catch fish resulted in significant management and economic problems. In 1989 the halibut fishing season lasted only 10 days, and the TAC was exceeded by 95 tonnes (Munro, Turris, Clark, Sumaila and Bailey, in press). The consequences of the race for fish within the halibut fishery are many: excess investment in fishing capacity; unsafe fishing operations, as harvesters will fish during extreme
weather conditions; increased releases at sea; misreported or under-reported catch mortality; poor product quality resulting in lower landed value; supply gluts; and shortened seasons. The consequences would be the same for other species managed using only TACs and limited licences. The management methods used in the halibut fishery did not address issues of incidental catch or limited entry licences focused solely on the management of individual species; they also did not address the interception of other species when conducting the fishery. Clearly, this combination of input and output controls did not lend itself to the sustainable management of the fishery—new management techniques were required.

In 1991, an additional output control was introduced—ITQs, which allowed each harvester to have a specified amount of catch allocated to him at the start of each season. The race to catch fish was diffused. ITQs gave harvesters an incentive to ensure the resource remained healthy, because they wanted to maximize the value of their asset (quota). After the implementation of ITQs in the halibut fishery, the season length became longer—250 days—and the landed catches by the halibut licenced fleet remained within the prescribed TAC. While fisheries such as sablefish also shifted to ITQ management, other species continued to be managed the way halibut was prior to the move to ITQs. Following is a brief description of the management techniques that were in place for the commercial groundfish fisheries prior to the implementation of the CGIPP.
Evolution of the Commercial Groundfish Fisheries

Each of the BC commercial groundfish fisheries, with the exception of lingcod and dogfish, are limited entry. Table 1 below describes the year and the number of licences created for each commercial groundfish fishery.

Table 1

<table>
<thead>
<tr>
<th>Fishery</th>
<th>Year of limited entry</th>
<th>Number of licences</th>
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<tbody>
<tr>
<td>Trawl</td>
<td>1976</td>
<td>142</td>
</tr>
<tr>
<td>Halibut</td>
<td>1979</td>
<td>435</td>
</tr>
<tr>
<td>Sablefish</td>
<td>1981</td>
<td>48</td>
</tr>
<tr>
<td>Inside ZN</td>
<td>1991</td>
<td>72</td>
</tr>
<tr>
<td>Outside ZN</td>
<td>1992</td>
<td>191</td>
</tr>
</tbody>
</table>

Dogfish and lingcod remain on the original “C” licence, which is also inherent to all vessel-based licences, which are licences associated with a vessel rather than a person. Although each fishery, with the exception of lingcod and dogfish, was limited to a specified number of licences, the management of these fisheries varied.

Not only were there complex input and output measures that differed by fishery, but for the same species, different management measures were employed. In addition, varying rules applied to incidental catches as well as conditions of licence did not permit the retention of much of this catch. These restrictions forced harvesters to release all the species they were unable to retain due to the regulations, and that mortality often was unaccounted for. Table 2 below summarizes the management measures used for each
groundfish fishery for their directed species, incidental rockfish, and other incidental
groundfish encountered while fishing. The table reveals the complexity of management
arrangements in the commercial groundfish fisheries.

Table 2
Summary of Management Techniques for Commercial Groundfish Pre-Integration

<table>
<thead>
<tr>
<th>Fishery</th>
<th>Management techniques by species group</th>
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<tr>
<td></td>
<td>Direct species</td>
</tr>
<tr>
<td>Halibut</td>
<td>ITQs</td>
</tr>
<tr>
<td>Sablefish</td>
<td>ITQs</td>
</tr>
<tr>
<td>Rockfish Outside</td>
<td>TACs with monthly limits</td>
</tr>
<tr>
<td>Rockfish Inside</td>
<td>TACs with monthly limits</td>
</tr>
<tr>
<td>Lingcod</td>
<td>TACs with monthly limits</td>
</tr>
<tr>
<td>Dogfish</td>
<td>TACs with no limits</td>
</tr>
</tbody>
</table>

\(^a\) until TACs are achieved
Species-specific fisheries and limited entry licences were created to manage individual species, but unfortunately this approach was somewhat short-sighted. This type of management regime did not address issues of incidental catch, a growing concern within fisheries management. A single species approach to management revealed significant sustainability concerns, and a shift to an ecosystem-based approach was promoted. The next chapter provides a brief review of the literature on an ecosystem-based approach to fisheries management, since much of the CGIPP entails this type of approach—accounting for the impact on all catch either targeted or incidental.
Chapter 4: Ecosystem-Based Management Literature Review

A number of fisheries, including groundfish in BC, face conservation concerns related to the incidental catches. This has contributed to increased attention to the need for an ecosystem-based approach to fisheries management, as opposed to the frequently deployed single-species approach. The aim of this literature review is to explore the various definitions of ecosystem-based management and try to extract commonalities. It will also describe the various views on transitioning from single-species management to an ecosystem-based approach, including changes to institutional structures and decision-making processes.

Defining Ecosystem-Based Management

There are myriad definitions for ecosystem-based management, however a common theme relates to ensuring long-term sustainability of the resources. Meffe et al. (2002) define ecosystem management as “an approach to maintaining or restoring the composition, structure, and function of natural and modified ecosystems for the goal of long-term sustainability.” Similarly, Jennings (2004) believes that an ecosystem approach “puts emphasis on a management regime that maintains the health of the ecosystem alongside appropriate human use of the marine environment for the benefit of current and future generations.” Collectively, authors who have weighed in on ecosystem-based management emphasize that it is “an approach to problem solving” (Meffe et al., 2002) that can be used to “complement existing fisheries management practices” (Ecosystem Principles Advisory Panel, 1998). Each definition speaks to the need for sustainability, therefore, an ecosystem approach should include the integration of social, economic and
conservation objectives. Dale (2001) defines sustainable development as a process involving the reconciliation of three imperatives: ecological, social and economic, each of which she feels are necessary and sufficient. In addition, when considering ecosystem-based management, one must also consider people; Lotze (2004) states “ecosystem-level management means that ecosystems are managed with the goal of optimal functioning of all parts (including humans).” These definitions help provide perspective on the problems faced by many traditional fisheries management techniques, such as the most common single species management.

**Single-Species Management to Ecosystem-Based Management**

Jennings (2004) states, “…from an ecological, economic and social perspective, existing management methods have generally failed.” He argues that a shift to ecosystem-based management will remedy impacts of fishing on incidental catches, habitats and ecological interactions. Take for example this quote from Aldo Leopold (1966):

> If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent thinking.

Sissenwine and Murawski (2004) feel that Leopold’s quote introduces the concept of uncertainty in how ecosystems are organized and therefore strengthens the argument to use precaution when faced with doubt. The Ecosystem Principles Advisory Panel (1998) states that moving to an ecosystem based approach requires managers to understand how harvesting one species might impact other species in the ecosystem. They go on to explain that the effects on other species (direct and indirect) are, more often than not, excluded from the management plan. Traditional single-species approach to management
may not be sufficient and, therefore, managers should recognize that an ecosystem approach may help to underpin improved management (Jennings, 2004).

Although much of the literature focuses on single-species management, some authors argue that this approach is used as a scapegoat for the current fisheries management situation (Mace, 2004). Mace argues that an ecosystem-based approach should build upon and integrate traditional single species objectives rather than merely abandoning it. Likewise, Sissenwine and Murawski (2004) feel that efforts to advance beyond the single species approach have generally emerged in a piecemeal manner in response to challenges to the legitimacy of fishing. An ecosystem-based approach does not simply mean changes to management measures that focus on incidental catch prevention, but rather goes beyond to address more overarching issues such as the institutional and decision-making structures of fisheries management.

**Linkage Between Ecosystem-Based Management and Institutional Structures**

Some of the ecosystem-based management literature also identifies a need for change in institutions and decision-making processes. Hilborn (2004) goes so far as to state that current management problems are not centered on single-species management failure but reflect a failure related to the command-and-control management approach (i.e., almost complete government management control) used worldwide. Hilborn supports a more incentive-based approach to management that recognizes the dynamics between harvesters, managers, and scientists, and involves harvesters in all aspects of management. In a similar vein, Sissenwine and Murawski (2004) consider an ecosystem approach to fisheries as, “…a much more inclusive approach in terms of the diversity of stakeholder involvement.” An ecosystem-based approach to management extends beyond
changes to management measures pertaining to fish harvest. Meffe et al. (2002) believe that an ecosystem-based approach should focus on decisions made by a broad group of interests and stakeholders.

Clearly an ecosystem-based approach requires a shift in fisheries management techniques to focus on the total impacts of commercial harvest coupled with a more inclusive approach to the decision-making process. This seems reasonable considering that increased changes in fisheries management techniques require a corresponding increased interaction between government and stakeholders, which is known as co-management. The major co-management issues that have been identified in the fisheries co-management literature will be discussed next. Chapter 5 also provides an overview of the evolution of co-management arrangements in BC, including the commercial groundfish fisheries prior to the CGIPP.
Governments are given responsibility for the management of fisheries in most developed countries. As noted previously, concern is being raised that government fisheries management agencies are failing to achieve their stated conservation, social and economic objectives. There is suspicion that this failure is due to heavy reliance by governments on their departments as the major source of fisheries management advice. As such, there is pressure on government departments to include other stakeholders in the advisory/decision-making process. This institutional discussion is frequently referred to as co-management and is focused on, among other things, which stakeholders should be involved in fisheries management decision making, how representation should be determined, and what should be the relative roles of various parties. A review of the literature on this topic is presented in the first part of this chapter, and an attempt is made to shed some light on the relevance of the new co-management arrangements developed as a result of the CGIPP in the latter part of this thesis. The second half of the chapter examines the evolution of these institutional arrangements within BC fisheries, including a closer look at groundfish prior to the CGIPP.

**Co-Management Literature Review: Operational Aspects**

Although there are many articles that attempt to define the term co-management, minimal literature exists on its operational framework. To understand co-management arrangements, one must deconstruct the whole spectrum: at one end, government makes all decisions and has ultimate power, and at the other, stakeholders have final authority
on all decisions. Many authors, such as Jentoft and McCay (1995), Pomeroy and Berkes (1997), and Hughey, Cullen, and Kerr (2000), believe that co-management is a type of power-sharing arrangement that puts us somewhere in the middle of the spectrum. The implication is that decision-making is equally shared between stakeholders and government. This view is shortsighted, as it assumes that decisions relating to fisheries management occur in the aggregate rather than in a series of function-specific decisions. Pinkerton (1989) and Sen and Nielsen (1996) support the idea of shared responsibility, but acknowledge that there are various management tasks subject to different types of co-management arrangements. One must first identify who should be involved, how their selection is determined and the institutional framework they operate within. These aspects are further analyzed next.

**Stakeholders**

Some believe in a broad approach to participation whereby all interested parties should be involved while others take a more focused approach, where only the impacted sector participates in decision making. The former view advocates participation by commercial fishers, recreational fishers, crew members, fish workers, processors, unions, local communities, indigenous people and consumers. For example, in Norway, regional councils include commercial fishermen represented by functional groups (by gear), fish processors, trade union, recreational fishermen, and the environmental sector (Jentoft and McCay, 1995). Similarly, in the United States of America (USA), members of regional councils range from commercial and recreational fishers to consumers, seafood processors, and environmentalists (Pomeroy and Berkes, 1997).
On the other hand, there are those such as Townsend and Pooley (1995) who argue that those who hold commercial access in the form of a “share” should make management decisions. This could be anyone with an interest and willingness to pay the price to acquire “shares” in the resource (Townsend, 1995). For example, the Challenger Scallop Enhancement Company (Challenger) in New Zealand restricted membership to quota owners and processors only (Yandle, 2006). Once the difficult task of sorting out who should be involved is complete, the next step is to identify how stakeholders are determined.

Deciding which stakeholders should participate in co-management arrangements can be done in various ways. In the USA, regional councils are nominated by governors and then appointed by the US Secretary of Commerce (Pomeroy and Berkes, 1997). Similarly, the Minister of Environment appoints representatives that participate in the Guardians of Fiordland’s Fisheries (New Zealand) co-management group. In Norway, the Union and Sports Institute respectively appoint both commercial and recreational harvesters to the regional council (Jentoft and McCay, 1995). It seems that in most circumstances either government appoints stakeholders or stakeholders are elected or appointed by their respective sectors. The next section will discuss the different institutional frameworks that exist to gather advice and make decisions.

**Institutional Framework**

Institutional frameworks (commonly referred to as advisory bodies) can be established either by government or industry. Some advisory bodies provide advice directly to the government, whereas others have the authority to make decisions on the management of the fishery. For example, in New Zealand the scallop ITQ owners
established a private company (Challenger) that jointly manages the commercial southern scallop fishery with the Ministry of Fisheries. A memorandum of understanding between the Ministry and Challenger specified a relationship whereby both parties would share the responsibility to manage the fishery (Yandle, 2006). Challenger is managed by professional staff who report to a Board that approves fisheries management plans (Hughey et al., 2000). This is an example where industry established the institutional framework and also had the authority to make decisions. The European Union (EU) has provided their governance authorities with proper direction. The EU produced consultation guidelines for a Commission-wide approach to consultations whereby minimum standards for the governance of advisory committees were put into place. Pomeroy and Berkes (1997) indicate there is a hierarchy of co-management arrangements, from harvesters merely being consulted by government before regulations are introduced, to harvesters designing, implementing, and enforcing laws and regulations with advice and assistance from the government. Determining the level of advice or decisions required is linked to identifying what specific management task is being discussed.

*Function-Specific Management*

Whether stakeholders provide advice or make decisions, one must recognize the need to deconstruct fisheries management into individual tasks. Pinkerton (1989) begins to do this more broadly by separating tasks between national and local levels of government (Pomeroy and Berkes, 1997). Acknowledging that each fisheries management function requires a different skill set and knowledge base, Carlsson and Berkes (2004) espouse that one should focus on how different management tasks are
organized and distributed with focus on the function, rather than the formal structure of the system. Likewise, different functions could require participation by various stakeholders. Jentoft, McKay, and Wilson (2003) explain that representation of different stakeholders would change depending on the subject matter.

Sen and Nielsen (1996) perceive co-management as a broad spectrum of possible decision-making between government and stakeholders with associated tasks that may have varying co-management arrangements, such as policy formulation, resource estimation, access rights, harvesting regulations, market regulations, monitoring, control, and enforcement. These are similar to Pinkerton’s management functions: data gathering; logistical decisions, that is, who can fish and when; allocation decisions; protection of the resource from environmental damage; and enforcement (as discussed in Pinkerton, 1989).

The BC Experience

As fisheries management has evolved over time within BC, so too have the roles of government and stakeholders in fishing. Currently within DFO, approximately 53 advisory bodies exist in BC ranging from regional, bilateral, sectoral, species-based, legislated bodies to strictly operational advisory groups (DFO, 2004). Over the past decade, the demand on DFO staff to participate in consultation activities to ensure the sustainable management of fisheries resources has increased dramatically. Furthermore, a fiduciary relationship exists between the Government of Canada and the First Nation peoples of Canada, which adds additional complexity to stakeholder consultations.

A majority of the current advisory boards are structured so that where DFO consults with one user group at a time to solicit advice on a wide range of topics associated with the sustainable management of BC fisheries. The various consultative
bodies within BC have been established in an ad hoc manner to address certain needs and circumstances pertaining to specific species. Advisory processes mirrored the changes occurring within fisheries management. As species specific fisheries were created, so too were species specific advisory processes to provide management advice. As a result, within DFO many advisory processes exist without a clear mandate. Similarly, changes to co-management arrangements within the commercial groundfish fisheries have occurred as changes in management techniques were made. Independent species-specific advisory processes were created within the commercial groundfish fisheries as new management arrangements that focused on single species management were introduced. The groundfish co-management arrangements prior to the development of the CGIPP are briefly described below.

*Groundfish Institutional Arrangements*

Four species-specific advisory processes were established within the commercial groundfish fisheries over the past two decades as limited entry licensing regimes evolved. The commercial groundfish advisory processes include the Halibut Advisory Board (HAB), the Sablefish Advisory Committee (SAC), the Groundfish Hook and Line Advisory Committee (GHLAC), and the Groundfish Trawl Advisory Committee (GTAC). DFO establishes and chairs each of the processes with the exception of SAC, which is co-chaired by DFO and the industry. Each of the fishery-specific advisory processes was established to provide advice to DFO and assist in the overall planning, management, and enforcement of species-specific fisheries, with decision-making authority solely resting with the Minister. Separate terms of reference (TOR) have been developed for each of these processes (DFO, 2008a). Each groundfish advisory board
meets approximately four times a year, and the terms of office range from one to three years. Due to the varying nature of each of the fisheries, the membership of each advisory process differs. Table 3 below shows the general makeup of each advisory board.

Table 3  
*Membership of Each Commercial Groundfish Advisory Process*

<table>
<thead>
<tr>
<th></th>
<th>HAB</th>
<th>SAC</th>
<th>GTAC</th>
<th>GHLAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>First Nations</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Union</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Processors</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Province of BC</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Recreational</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DFO</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
<td></td>
<td></td>
<td>Xa</td>
</tr>
<tr>
<td>Industry Associations</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*a Invited to participate, but no representative to date*

In addition to the general membership described above, DFO has the authority to appoint additional parties to these processes to provide additional advice. Anyone may attend as an observer, and time is allotted at the end of the meeting to allow for observers to speak. Commercial representatives are elected by licence holders, with the exception of lingcod and dogfish members, who are appointed. SAC determines membership annually by a vote at the association’s annual general meeting. All non-commercial representatives are appointed by DFO.
The extent to which each of these advisory processes is involved in the execution of specific management functions varies by task. Generally the TOR for each commercial advisory process indicates that the members are a forum for communication between the industry and DFO. More specifically, each advisory board contributes to the development of the Integrated Fisheries Management Plan (IFMP), including advice on trip limits, annual vessel caps, and carryover amounts for their fishery (species-specific). They provide advice on policy issues and bring forward concerns raised by industry participants. For each management task, whether it be enforcement of the fishery or establishing the total allowable catch, advisory members are offered the opportunity to provide advice to DFO.

This type of organizational structure, which focused solely on issues surrounding the species specific fisheries, was shortsighted. No fishery can catch only a single species when fishing, and therefore, impacts to the incidental catch of other species were not considered. There was no mechanism for different fisheries to engage with other advisory processes to discuss problems such as incidental catch, allocation with other sectors, and monitoring. Each issue was becoming a significant challenge within the groundfish fisheries by early 2000, as conservation concerns for rockfish began to arise. A mechanism to discuss the broader impacts of the harvesting of single species was required. Chapter 6 will provide more details on the impetus for the development of the CGIPP and the new co-management arrangements established to facilitate the process.
Chapter 6: The End of the Line—DFO Lays Down the Law

Impetus for the Commercial Groundfish Integration Pilot Program

The commercial groundfish fishery consists of seven fisheries, multiple licence categories, harvesting more than 20 different species. Management had been species specific and monitoring was limited. The hook and line and trap fisheries were required to have approximately 10 to 15% of the vessels in the fishery use at-sea monitoring, either through an on-board observer or electronic monitoring (EM). The complexity of different regulated single species fisheries combined with the lack of accurate reporting of catches and releases, by area and species, led to significant conservation concerns. This practice of releasing fish at sea occurred because fleets were unable to restrict their harvest to their target species and the conditions of licence did not permit retention of the incidental catch. As such, harvesters were, therefore required to release much of their incidental catches. Harvesters had no incentive to accurately report their catch.

The Inshore Rockfish Conservation Strategy put forward by DFO in 1998 called for better management of rockfish species. The objectives of the strategy were to collect information on total fishery mortalities through improved catch monitoring, reduce harvests, improve the ability to assess population status, and monitor changes in abundance (DFO, 2002). In 2002, the commercial TAC for inshore rockfish in the Strait of Georgia was reduced by 75%; for the remainder of the west coast (considered the “outside”) the reduction was 50%. Inshore rockfish refers to species of the genus *Sebastes* that inhabit rocky reefs in relatively shallow waters from Alaska to California (Yamanaka and Lacko, 2001). There were problems with inshore rockfish, because they
constitute a common incidental catch in most hook and line and trap fisheries and have a high mortality rate (near 100%). The mortality was not being accounted for or deducted from the TACs because of the lack of adequate monitoring.

Effective monitoring and accurate reporting of all catch, both landed and released at-sea, is integral to sustainable fisheries management. In 2001, DFO initiated its Selective Fishing Policy with three objectives: enforcing selective fishing technology, avoiding incidental catches, and releasing any incidental catch alive and unharmed (DFO, 2001). The policy clearly stated that DFO would work with recreational and commercial organizations to develop selective fishing standards and implement action plans for each fishery by January 2003. In 2003 the Species at Risk Act (SARA) came into force and further afforded legal protection by the Government of Canada to any species listed under the Act. Several rockfish species are currently under review by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which makes listing recommendations to the Minister of Environment, for legal protection from “not at risk” to “special concern,” “threatened,” or “endangered” species under SARA. Management measures were clearly required to address rockfish conservation concerns.

In 2003, DFO established five guiding principles to help meet these conservation objectives:

1. All rockfish catch must be accounted for;
2. Rockfish catches will be managed according to established rockfish management areas;
3. Harvesters will be held individually accountable for their catch;
4. New monitoring standards will be established and implemented to meet the above three objectives;

5. Species of concern will be closely examined, and actions such as reduction of TACs and other catch limits will be considered and implemented to be consistent with the precautionary approach for management.

Stakeholders were advised that these five guiding principles must be met for the management of the commercial groundfish fisheries, as the existing situation was untenable. Either industry stakeholders could come up with a proposal to address these principles by 2006. Originally the deadline was 2005, however industry asked for an additional year to develop a plan. Alternatively, DFO would implement its own plan. To facilitate the development of a proposal, two new institutional arrangements were developed: the CGIAC and CIC. The following section describes each of these co-management arrangements and their role in the development of the proposal.

*The Two New Co-Management Arrangements: The Commercial Groundfish Integrated Advisory Committee and Commercial Industry Caucus*

In October 2003, DFO established two additional co-management arrangements to deal with the inter-fishery dynamics of an integration plan. The CGIAC, a multi-stakeholder process, was the overarching committee; the CIC was developed as a commercial industry sub-committee. Each was guided by the five principles established by DFO, described above, as well as their own TOR. A brief description of each body is provided below.
The Commercial Groundfish Integrated Advisory Committee

The CGIAC had a mandate to provide formal advice and recommendations to DFO on the future management of the groundfish fisheries in BC as well as long-term direction and overarching policy issues affecting commercial groundfish fisheries in the Pacific Region (DFO, 2003). Minutes from the July 15th, 2004 CGIAC meeting, held in Victoria, state: “… the CGIAC is tasked with integrating the commercial industry only” (CGIAC, 2004). Objectives of the committee ranged from ensuring conservation and sustainable production from the resource to providing employment and economic benefits to the province as a whole. The complete TOR for the CGIAC can be found in Appendix B. The CGIAC was also to provide direction to the CIC and any other sub-committee regarding priorities and initiatives. Reaching consensus among CGIAC participants was not essential for providing advice. Essentially, the intent was for the proposal (to meet the guiding principles) to be vetted through this committee for feedback on questions such as how the commercial proposal would impact the other interests around the table and whether any of the suggested impacts could be mitigated.

Dr. Richard McGuigan from Diamond Management Consulting, Inc., an independent consultant, became the primary chair of the CGIAC. The membership of the CGIAC was diverse, in keeping with the view of some that all interested parties should be at the table, as previously mentioned in the literature review. The original membership included representatives from many interests: commercial, recreational, processing, environmental, union, DFO, the Province, coastal communities, and First Nations. Of the 21 members of the CGIAC, half were commercial industry representatives, selected by their respective advisory bodies (described in Chapter 4); the rest were appointed by
DFO. It is important to note that the environmental interests originally appointed to the CGIAC chose not to continue to participate after the initial planning session. They stepped away from the process for reasons unrelated to the task at hand.

*The Commercial Industry Caucus*

The CIC was to provide formal advice and recommendations to the CGIAC on the future management of the commercial groundfish fishery and subsequently developed the proposal that was brought to the CGIAC for discussion (Diamond Management Inc, 2005). The complete TOR for the CIC can be found in Appendix C. The commercial representatives on the CGIAC consisted of the CIC and included representatives selected by each of the commercial groundfish advisory processes. There were two members and two alternates from the SAC, HAB, GHLAC, and GTAC. In addition, the CIC also included seats for the Province of BC, DFO, and processors and invited participation by the union. No observers were permitted at these meetings.

In addition to the guiding principles put forward by DFO, the CIC contextualized all of their work based on objectives that focused on the commercial fishery. Objectives ranged from ensuring the sustainable harvest and monitoring of groundfish species to ensuring the economic viability of the fisheries (Diamond Management Consulting, Inc., 2005). The CIC met on a regular basis, sometimes 10 to 15 times a month (at their own expense), to discuss what an integrated fishery that addressed the principles set forth by DFO should look like, and they subsequently developed a pilot proposal. The caucus was chaired by the same independent facilitator, but this body chose consensus as its modus operandi. The consensus process enhanced the power of this group to make recommendations to DFO and consequently was more likely to be heeded. There was
incentive to reach consensus because if the CIC failed to develop a plan to address DFO’s conservation concerns, DFO would have implemented its own AFP. The group worked to overcome inter-fleet barriers that had previously existed to develop the detailed pilot proposal as described below.

**Key Elements of the Commercial Groundfish Integration Pilot Program**

The pilot proposal, as recommended by the CIC, evolved into the CGIPP, which was approved by the Minister of Fisheries and Oceans on a three-year pilot basis. The pilot was extended for one additional year to allow for a full evaluation. Essentially there are six critical components to the CGIPP: the implementation of ITQs; the ability to retain other species; individual vessel accountability; quota transferability between fisheries; new, consistent management areas; and improved catch monitoring. Each is described in more detail below.

**Establishment of Individual Transferable Quotas for All Groundfish Fisheries**

The impetus to expand DFO’s original principles became clear to members of the CIC as they attempted to develop a plan whereby all harvesters from each fishery were accountable for their rockfish incidental or targeted catch. The CIC supported the notion that rockfish had to become a quota species that could be transferred between licence types. If only the rockfish fishery implemented ITQs, this would leave dogfish and lingcod as the only two fishing sectors not managed using this type of management technique. Lingcod and dogfish representatives realized they also needed to implement ITQs for their fisheries as well so that they had something of value to trade with rockfish, sablefish, and halibut ITQ vessels. The three fisheries not previously managed using
ITQs (rockfish, lingcod, and dogfish) moved to this type of management technique in 2006; additionally, the CIC expanded upon DFO’s original principles to make harvesters accountable for all their catch, not only rockfish. Holding harvesters accountable for all their catch would require the trading of quota for all species among all licence types. The trading of quota operated under the principle of willing buyer/willing seller. The two rockfish fisheries, the inside and outside, used an equal split formula while the lingcod and dogfish sectors developed a formula based on historic catches during the years 1996 to 2003. For non-quota species (not all groundfish species have a TAC), effort controls such as trip limits continued to be used.

_Ability to Retain Other Species_

As described above, harvesters were to be held accountable for all their catch under the CGIPP. Previously, the conditions of licence would not permit the retention of incidental catches. Under the CGIPP, all conditions of licence were amended to allow for the retention of other groundfish species. However, there were limits (annual and monthly) placed on the amount of other groundfish species each harvester could retain. For example, a dogfish harvester would now also be able to retain sablefish, halibut, rockfish and additional amounts of lingcod rather than releasing them as had been required under the previous management measures. Table 4 below illustrates the species each groundfish fishery is now permitted to retain.
<table>
<thead>
<tr>
<th>Fishery</th>
<th>Management techniques by species group</th>
<th>Directed species</th>
<th>Rockfish</th>
<th>Other groundfish</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Trip limits and</td>
<td>Trip limits and annual vessel caps for sablefish, lingcod and dogfish</td>
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<tr>
<td>Halibut</td>
<td>ITQs</td>
<td></td>
<td>annual vessel caps</td>
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<tr>
<td>Sablefish</td>
<td>ITQs</td>
<td></td>
<td>Trip limits and</td>
<td>Trip limits and annual vessel caps for halibut, lingcod and dogfish</td>
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<td></td>
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<td></td>
<td>annual vessel caps</td>
<td></td>
</tr>
<tr>
<td>Rockfish Outside</td>
<td>ITQs</td>
<td>n/a</td>
<td>Trip limits and</td>
<td>Trip limits and annual vessel caps for sablefish, halibut, lingcod and dogfish</td>
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<tr>
<td>Rockfish Inside</td>
<td>ITQs</td>
<td>n/a</td>
<td>Trip limits and</td>
<td>Trip limits and annual vessel caps for sablefish, halibut, lingcod and dogfish</td>
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<td>Lingcod</td>
<td>ITQs</td>
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<td>Trip limits and</td>
<td>Trip limits and annual vessel caps for sablefish, halibut and dogfish</td>
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<td>annual vessel caps</td>
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<tr>
<td>Dogfish</td>
<td>ITQs</td>
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<td>Trip limits and</td>
<td>Trip limits and annual vessel caps for sablefish, lingcod and halibut</td>
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<tr>
<td></td>
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<td>annual vessel caps</td>
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</tbody>
</table>
The rationale for imposing limits on the amount of incidental catches by each fishery was Principle 9 in the original CIC proposal, which called for fishing fleets to protect the autonomy of their directed fishery (Diamond Management Consulting Inc., 2005). Essentially, each fishing fleet did not want others “targeting” fish considered incidental to their fishery. Limits were placed to require harvesters to be accountable for their incidental catch while participating in their directed fisheries.

*Individual Vessel Accountability*

Vessels are required to acquire quota to cover the mortality for all catches, including those fish released at sea while fishing. Vessels not acquiring quota or fishing within the prescribed limits outlined within the IFMP are unable to continue fishing. While variables such as gear types and the times and locations of fishing trips affect the amount of incidental catch intercepted, it is possible for a harvester to plan his fishery in such a way as to be able to expect and account for a specified amount of incidental catch. Due to their high mortality rate, all rockfish caught while fishing must be retained; for all other species, a harvester can choose to either retain or release legal size fish. If released, the harvester is responsible for the mortality associated with that fish, which varies by species and gear type. A harvester’s behaviour is the most significant factor in his ability to access quota for incidental catch.

*Quota Transferability Between All Groundfish Fisheries*

To enable vessels to account for all groundfish catch mortality, including fish released at sea, quotas need to be transferable between fisheries (different licence types). Reallocation of quotas between fisheries is only temporary (for the year), and limits have
been placed on how much quota a vessel can acquire. Because this is a pilot program, quota may be temporarily reallocated to another licence only for the duration of the season, with the exception of halibut and sablefish. Permanent reallocations of halibut may occur between halibut licenses and likewise with sablefish. These limits are in place in part due to the autonomy of the sector described above, but also to keep incidental species quotas available and ensure that harvesters fish selectively. In addition, individual fleets have developed annual vessel caps that provide sufficient incidental catch to pursue the target fishery but will not allow for the accumulation of large amounts of incidental quota on any one vessel.

**Consistent Management Areas**

One of DFO’s guiding principles included the establishment of rockfish management areas. Prior to the integration program, there were varying management areas for different fisheries and for different species. Common management areas allow DFO to manage stocks by area, which will improve stock assessment for groundfish species. Lastly, common management areas are especially critical when all species quotas are transferable between fisheries.

**Catch Monitoring**

Timely and accurate information on harvesting practices and catch composition and location is essential to assess the status of fish stocks and ensure the conservation and long-term sustainability of fish resources. While the previous dockside monitoring program (DMP) allowed for all landed catch to be verified, at-sea monitoring is also essential for incidental catch, which may not be landed and for which DFO would
otherwise have little or no fishery data. As such, in 2005 DFO issued letters to all
groundfish licence holders indicating that commencing in 2006, the new standard for
commercial groundfish fisheries would be 100% at-sea monitoring. This was in addition
to the already existing 100% DMP requirement.

The new catch monitoring program requires all vessels fishing within the hook
and line and trap fisheries to have at-sea monitoring either via onboard observers or EM.
EM technology incorporates a system of onboard cameras integrated with GPS and other
onboard electronic sensors. Harvesters are required to record all retained and released
catch by piece and by location within their logbooks. Ten percent of the camera footage
is viewed to check the accuracy of the harvesters’ logbook. The data collected at the
DMP, which verifies only catch that is retained and landed, is also used to audit the
logbook. If a logbook is found not to accurately represent actual catch seen on the video
footage or the DMP, 100% of the camera footage is reviewed at the individual harvester’s
expense. If it is found that a vessel’s logbook consistently does not match with the
camera footage, the vessel will be required to take an onboard observer on future trips.
Irrespective of the proposal developed by the CIC, DFO would have implemented the
100% at-sea monitoring requirement at the beginning of the 2006 fishing season.
Chapters 7–9: Discussion

Chapters 7 through 9 discuss the conservation, economic, and social impacts that have occurred since the implementation of the CGIPP, including a discussion of the impacts that might have occurred under the AFP.

Chapter 7: Discussion of Conservation Impacts

As previously described, the original impetus for the CGIPP was conservation concerns arising from the accuracy and completeness of reported catch information with respect to rockfish. DFO wanted to ensure that mortality levels, including fish released at sea, remained within established TAC limits. Accurate data on rockfish mortality was required for effective, sustainable management of the species, which is reiterated in the *Inshore Rockfish Conservation Strategy* (DFO, March 2002). This section attempts to evaluate whether the quality of rockfish data improved under the CGIPP, compared to the AFP, using the criteria outlined in Chapter 2.

*DFO’s Alternative Fishing Plan*

Had the CIC not developed a proposal or had DFO not accepted the proposal, the management of the groundfish fishery would not have remained as it was. DFO would have been responsible for ensuring the conservation objectives for rockfish were met, and as such, a plan that met the guiding principles would have been implemented. On the extreme end, this may have resulted in an initial closure of all the groundfish fisheries. For the purpose of this thesis, I suggest the following AFP.

Perhaps the focus of the AFP would have remained on rockfish conservation. Consistent with the guiding principles, the 100% at-sea monitoring requirement might
have been implemented. The audits and the piece counts at DMP would, however, perhaps been focused on the accuracy of rockfish catch as opposed to all groundfish species. If all harvesters were to be accountable for their rockfish catch, consistent with the guiding principles, the following management changes likely would have occurred:

- All conditions of groundfish licences might have been amended to require the retention of rockfish,
- 100% retention of rockfish by all groundfish licence types (because of the high mortality when brought to the surface) might have been required, and
- Rockfish management areas might have been established.

Once an area’s rockfish TAC had been achieved collectively, the area might be closed whether or not TACs for the other species had been achieved, because when fishing for non-rockfish species, it is inevitable that rockfish will be caught incidentally. If the rockfish TAC had been reached, no further fishing (for any groundfish species) might have been permitted. Table 5 below provides a brief description of the potential management techniques under this AFP.

Table 5
*Summary of Potential Management Techniques Under the Alternative Fishing Plan*

<table>
<thead>
<tr>
<th>Fishery</th>
<th>Management techniques by species group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Directed species</td>
</tr>
<tr>
<td>Halibut</td>
<td>ITQs</td>
</tr>
<tr>
<td>Sablefish</td>
<td>ITQs</td>
</tr>
<tr>
<td>Rockfish Outside</td>
<td>No limit of</td>
</tr>
</tbody>
</table>
### Rockfish Mortality

Since the implementation of the CGIPP, is all rockfish mortality accounted for on a stock-specific basis? Previous to the implementation of the CGIPP, conditions of licence did not permit the retention of rockfish by other non-rockfish licences with the exception of a limited amount permitted on a halibut licence. Subsequently rockfish were being released at sea, and because there was only limited at-sea monitoring (approximately 10%) DFO could not be certain of the total mortality for rockfish. Under the CGIPP and its requirement for 100% at-sea monitoring through the use of EM or on-board observers, coupled with the requirement for all harvesters to retain all rockfish, the total mortality of rockfish is more accurately known. All the hook and line, and trap fisheries use EM instead of on-board observers because of the cost differential.

Dr. Rick Stanley and Norm Olsen, biologists at the Pacific Biological Station, examined whether the monitoring program provided sufficient accuracy of total catch estimates (Stanley and Olsen, in press). This allows fishery managers to be confident that catch remains within the prescribed TACs. They used yelloweye rockfish as a test case.
for the analysis. The analysis indicates the overall monitoring program produces accurate catch estimates for yelloweye rockfish. Furthermore, the 10% of video data collected “…provide a virtually independent and unbiased estimate of total catch in pieces” (Stanley and Olsen, in press), giving fishery managers additional confidence that catch estimates, used to ensure TACs are not exceeded, are indeed accurate.

Although only a test case for yelloweye is examined, this type of endorsement speaks positively for the catch monitoring program. Earlier scientific reviews indicated that the low level coverage of hook and line fisheries prior to integration produced estimates of catch that should not be used for management purposes (Haigh, Schnute, Lacko, Eros, Workman, and Ackerman, 2002). The analysis by Stanley and Olsen (in press) goes on to state that “There is no evidence of significant discarding or dumping.” More work, however, is required to analyze additional species, especially where species identification may be more difficult. Now that DFO has an accurate accounting of rockfish mortality, the next question is whether that mortality remained within the TACs. Remaining within TACs is the primary tool available to fisheries managers to ensure sustainable harvest.

*Staying Within the Limits*

Prior to implementation of the CGIPP, many of the rockfish TACs were achieved and some were exceeded. This was based on landed catch alone. Any releases at sea by other groundfish fisheries unable to retain rockfish were not included in the catch estimates shown below. Table 6 shows the catch of yelloweye rockfish from 2001 to 2005 (the season prior to the CGIPP) derived from DFO’s post-season summary reports (DFO, 2008b).
Table 6  
Yelloweye Catches (in Tonnes) from 2001/02 to 2005/2006 Fishing Season

<table>
<thead>
<tr>
<th></th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>QCI Yelloweye TAC</td>
<td>46.09</td>
<td>4.00</td>
<td>4.00</td>
<td>1.00</td>
<td>3.62</td>
</tr>
<tr>
<td>Catch</td>
<td>47.27</td>
<td>2.37</td>
<td>4.96</td>
<td>1.77</td>
<td>0.00</td>
</tr>
<tr>
<td>% of TAC</td>
<td>103%</td>
<td>59%</td>
<td>124%</td>
<td>177%</td>
<td>0%</td>
</tr>
<tr>
<td>Prince Rupert Yelloweye</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAC</td>
<td>26.79</td>
<td>9.72</td>
<td>11.81</td>
<td>11.36</td>
<td>10.93</td>
</tr>
<tr>
<td>Catch</td>
<td>8.53</td>
<td>7.34</td>
<td>8.18</td>
<td>5.29</td>
<td>1.32</td>
</tr>
<tr>
<td>% of TAC</td>
<td>32%</td>
<td>76%</td>
<td>69%</td>
<td>47%</td>
<td>12%</td>
</tr>
<tr>
<td>Central Coast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yelloweye TAC</td>
<td>70.65</td>
<td>32.14</td>
<td>30.27</td>
<td>34.45</td>
<td>37.37</td>
</tr>
<tr>
<td>Catch</td>
<td>71.26</td>
<td>31.59</td>
<td>26.88</td>
<td>30.83</td>
<td>23.91</td>
</tr>
<tr>
<td>% of TAC</td>
<td>101%</td>
<td>98%</td>
<td>89%</td>
<td>89%</td>
<td>64%</td>
</tr>
<tr>
<td>WCVI Yelloweye TAC</td>
<td>97.43</td>
<td>36.75</td>
<td>33.34</td>
<td>33.4</td>
<td>42.58</td>
</tr>
<tr>
<td>Catch</td>
<td>95.00</td>
<td>45.00</td>
<td>38.00</td>
<td>33.00</td>
<td>36.00</td>
</tr>
<tr>
<td>% of TAC</td>
<td>98%</td>
<td>122%</td>
<td>114%</td>
<td>99%</td>
<td>85%</td>
</tr>
<tr>
<td>Total Yelloweye TAC</td>
<td>240.96</td>
<td>82.61</td>
<td>79.42</td>
<td>80.21</td>
<td>94.50</td>
</tr>
<tr>
<td>Total Catch</td>
<td>222.06</td>
<td>86.30</td>
<td>78.02</td>
<td>70.89</td>
<td>61.23</td>
</tr>
<tr>
<td>% of Total TAC</td>
<td>92%</td>
<td>104%</td>
<td>98%</td>
<td>88%</td>
<td>65%</td>
</tr>
</tbody>
</table>
The above table demonstrates DFO’s inability, using the management techniques in place prior to the CGIPP, to remain within prescribed TACs. Each year prior to the CGIPP the one or more of the yelloweye area TACs were exceeded. Furthermore, the catch information used to derive these tables reflects only the landed catch and does not account for any releases that occurred at sea. For many years, rockfish TACs were overharvested, thereby contributing to the decline in stock abundance for these species.

Is the annual total stock specific rockfish mortality within the scientifically prescribed TACs since the CGIPP? The simple answer to this question is yes. Based on available commercial data, no rockfish TACs have been exceeded since the CGIPP. Moreover, many of the rockfish TACs were underharvested, based on total mortality.

DFO’s annual catch summary reports (DFO, 2009e), show the combined catch (all hook and line and trap sectors) for rockfish species since the implementation of the CGIPP. Although rockfish TACs were reduced in 2002 to meet the objectives of the Inshore Rockfish Conservation Strategy, the reduction in rockfish harvest under the CGIPP has further helped to achieve this objective. Table 7 below, derived from DFO’s annual catch summary reports (DFO, 2009e), shows the total mortality of yelloweye rockfish since the implementation of the CGIPP. Table 7 below shows that on average, for yelloweye rockfish, approximately 28% of the total TAC has been underharvested since the implementation of the CGIPP.

### Table 7
*Yelloweye Catches (in Tonnes) from 2006/07 to 2008/09 Fishing Season*

<table>
<thead>
<tr>
<th></th>
<th>2006/07</th>
<th>2007/08</th>
<th>2008/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yelloweye 5CD TAC</td>
<td>62.00</td>
<td>62.00</td>
<td>62.00</td>
</tr>
<tr>
<td></td>
<td>Yelloweye 5CD Total Quota</td>
<td>66.99</td>
<td>72.74</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Catch</td>
<td></td>
<td>45.12</td>
<td>42.51</td>
</tr>
<tr>
<td>% of TAC</td>
<td></td>
<td>73%</td>
<td>69%</td>
</tr>
<tr>
<td>% of Total Quota</td>
<td></td>
<td>67%</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td>Yelloweye 5E TAC</td>
<td>68.00</td>
<td>68.00</td>
</tr>
<tr>
<td></td>
<td>Yelloweye 5E Total Quota</td>
<td>71.73</td>
<td>81.63</td>
</tr>
<tr>
<td>Catch</td>
<td></td>
<td>41.71</td>
<td>59.313</td>
</tr>
<tr>
<td>% of TAC</td>
<td></td>
<td>61%</td>
<td>87%</td>
</tr>
<tr>
<td>% of Total Quota</td>
<td></td>
<td>58%</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>Yelloweye 5B TAC</td>
<td>58.00</td>
<td>58.00</td>
</tr>
<tr>
<td></td>
<td>Yelloweye 5B Total Quota</td>
<td>60.91</td>
<td>65.55</td>
</tr>
<tr>
<td>Catch</td>
<td></td>
<td>40.20</td>
<td>39.57</td>
</tr>
<tr>
<td>% of TAC</td>
<td></td>
<td>69%</td>
<td>68%</td>
</tr>
<tr>
<td>% of Total Quota</td>
<td></td>
<td>66%</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>Yelloweye 3CD 5A TAC</td>
<td>81.00</td>
<td>81.00</td>
</tr>
<tr>
<td></td>
<td>Yelloweye 3CD 5A Total Quota</td>
<td>82.50</td>
<td>96.33</td>
</tr>
<tr>
<td>Catch</td>
<td></td>
<td>47.82</td>
<td>66.39</td>
</tr>
<tr>
<td>% of TAC</td>
<td></td>
<td>59%</td>
<td>82%</td>
</tr>
<tr>
<td>% of Total Quota</td>
<td></td>
<td>58%</td>
<td>69%</td>
</tr>
<tr>
<td></td>
<td>Total Yelloweye TAC</td>
<td>269.00</td>
<td>269.00</td>
</tr>
<tr>
<td></td>
<td>Total Yelloweye Total Quota</td>
<td>282.12</td>
<td>316.24</td>
</tr>
</tbody>
</table>
The term “total quota” is used instead of TAC because it is the sum of the total quota held on all licenses. Species managed using ITQs are permitted to carry over unused quota from a given season into the following season. For example, a halibut harvester may carry over 30% of his rockfish quota to the following season. Similarly, harvesters may catch in excess of their quota in a given season (up to a fixed per cent) and that quota will be deducted from the vessel’s ITQ the following season. As such, the term total quota represents the established TAC plus or minus quota that was carried forward or overages that were incurred from the previous season. The catch information in Table 7 reflects catch from all groundfish fisheries, whereas Table 6 only reflects the catch by rockfish harvesters and some halibut harvesters who had a small allocation, as they were the only harvesters permitted to retain the species.

Additional Benefits

Essentially, the CGIPP took an ecosystem-based approach to the management of commercial groundfish fisheries whereby the impacts on incidental catches were also accounted for. As a result, there was improved data for all groundfish species, not only rockfish. Currently, there is better data on mortality of all groundfish species, because harvesters are now individually accountable for all their catch and are required to have 100% at-sea monitoring. Prior to the CGIPP, TACs for other species, such as lingcod,
had been exceeded as illustrated in Table 8 below and this was based only on landed catch.

**Table 8**  
*Lingcod Catches (in tonnes) from 2001/02 to 2005/06 Fishing Season*

<table>
<thead>
<tr>
<th></th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lingcod 3C TAC</td>
<td>150.00</td>
<td>150.00</td>
<td>150.00</td>
<td>150.00</td>
<td>150.00</td>
</tr>
<tr>
<td>Catch</td>
<td>131.69</td>
<td>99.5</td>
<td>135.21</td>
<td>136.88</td>
<td>143.57</td>
</tr>
<tr>
<td>% of TAC</td>
<td>88%</td>
<td>66%</td>
<td>90%</td>
<td>91%</td>
<td>96%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lingcod 3D TAC</td>
<td>180.00</td>
<td>180.00</td>
<td>180.00</td>
<td>180.00</td>
<td>180.00</td>
</tr>
<tr>
<td>Catch</td>
<td>162.25</td>
<td>204.24</td>
<td>169.68</td>
<td>188.58</td>
<td>164.40</td>
</tr>
<tr>
<td>% of TAC</td>
<td>90%</td>
<td>113%</td>
<td>94%</td>
<td>105%</td>
<td>91%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lingcod 5AB TAC</td>
<td>200.00</td>
<td>200.00</td>
<td>200.00</td>
<td>200.00</td>
<td>200.00</td>
</tr>
<tr>
<td>Catch</td>
<td>202.66</td>
<td>152.04</td>
<td>150.96</td>
<td>176.76</td>
<td>181.80</td>
</tr>
<tr>
<td>% of TAC</td>
<td>101%</td>
<td>76%</td>
<td>75%</td>
<td>88%</td>
<td>91%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lingcod 5CDE TAC</td>
<td>420.00</td>
<td>420.00</td>
<td>420.00</td>
<td>420.00</td>
<td>420.00</td>
</tr>
<tr>
<td>Catch</td>
<td>268.76</td>
<td>159.18</td>
<td>307.86</td>
<td>253.87</td>
<td>146.19</td>
</tr>
<tr>
<td>% of TAC</td>
<td>64%</td>
<td>38%</td>
<td>73%</td>
<td>60%</td>
<td>35%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Lingcod TAC</td>
<td>950.00</td>
<td>950.00</td>
<td>950.00</td>
<td>950.00</td>
<td>950.00</td>
</tr>
<tr>
<td>Total Catch</td>
<td>765.36</td>
<td>614.96</td>
<td>763.71</td>
<td>756.09</td>
<td>635.96</td>
</tr>
<tr>
<td>% of Total TAC</td>
<td>81%</td>
<td>65%</td>
<td>80%</td>
<td>80%</td>
<td>67%</td>
</tr>
</tbody>
</table>
Since the implementation of the CGIPP, none of the lingcod TACs have been exceeded, as is shown in Table 9 below, with one exception. The table shows that in 2008 the halibut TAC for lingcod in 5AB was exceeded by 59%, however this is not the case. As described earlier, if quota is not caught during a given season, it may be carried forward (carryover of an underage) to the following season. Furthermore, in 2008 the trawl sector made lingcod available to the hook and line fishery, so the total quota permitted to be caught by the lingcod hook and line fishery was more than the TAC.

Table 9
*Lingcod Catches (in Tonnes) from 2006/07 to 2008/09 Fishing Season*

<table>
<thead>
<tr>
<th></th>
<th>2006/07</th>
<th>2007/08</th>
<th>2008/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lingcod 3C TAC</td>
<td>150.00</td>
<td>150.00</td>
<td>150.00</td>
</tr>
<tr>
<td>Lingcod 3C Total Quota</td>
<td>131.84</td>
<td>139.03</td>
<td>181.89</td>
</tr>
<tr>
<td>Catch</td>
<td>55.53</td>
<td>77.54</td>
<td>107.17</td>
</tr>
<tr>
<td>% of TAC</td>
<td>37%</td>
<td>52%</td>
<td>71%</td>
</tr>
<tr>
<td>% of Total Quota</td>
<td>42%</td>
<td>56%</td>
<td>59%</td>
</tr>
<tr>
<td>Lingcod 3D TAC</td>
<td>180.00</td>
<td>180.00</td>
<td>180.00</td>
</tr>
<tr>
<td>Lingcod 3D Total Quota</td>
<td>172.06</td>
<td>210.24</td>
<td>208.30</td>
</tr>
<tr>
<td>Catch</td>
<td>114.92</td>
<td>140.53</td>
<td>131.48</td>
</tr>
<tr>
<td>% of TAC</td>
<td>64%</td>
<td>78%</td>
<td>73%</td>
</tr>
<tr>
<td>% of Total Quota</td>
<td>67%</td>
<td>67%</td>
<td>63%</td>
</tr>
<tr>
<td>Lingcod 5AB TAC</td>
<td>200.00</td>
<td>200.00</td>
<td>200.00</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>2015</td>
<td>2016</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Lingcod 5AB</td>
<td>215.42</td>
<td>293.09</td>
<td>481.88</td>
</tr>
<tr>
<td>Catch</td>
<td>140.64</td>
<td>193.44</td>
<td>318.63</td>
</tr>
<tr>
<td>% of TAC</td>
<td>70%</td>
<td>97%</td>
<td>159%</td>
</tr>
<tr>
<td>% of Total Quota</td>
<td>65%</td>
<td>66%</td>
<td>66%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lingcod 5CDE</td>
<td>420.00</td>
<td>420.00</td>
<td>420.00</td>
</tr>
<tr>
<td>TAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catch</td>
<td>262.75</td>
<td>359.56</td>
<td>373.45</td>
</tr>
<tr>
<td>% of TAC</td>
<td>63%</td>
<td>86%</td>
<td>89%</td>
</tr>
<tr>
<td>% of Total Quota</td>
<td>52%</td>
<td>58%</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Lingcod</td>
<td>950.00</td>
<td>950.00</td>
<td>950.00</td>
</tr>
<tr>
<td>TAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quota</td>
<td>1022.50</td>
<td>1266.34</td>
<td>1647.97</td>
</tr>
<tr>
<td>Catch</td>
<td>625.48</td>
<td>771.07</td>
<td>930.74</td>
</tr>
<tr>
<td>% of Total TAC</td>
<td>66%</td>
<td>81%</td>
<td>98%</td>
</tr>
<tr>
<td>% of Total Quota</td>
<td>61%</td>
<td>61%</td>
<td>56%</td>
</tr>
</tbody>
</table>

The DFO year-end catch summary reports, described above, show that the total quota for any groundfish species has not been exceeded since the implementation of the CGIPP. Moreover, the catch represented in Table 9 includes fish retained and released by all groundfish fisheries, whereas the catch in Table 8 reflects only the retained catch. The CGIPP has allowed for better accuracy of total mortality, including all releases at sea, to ensure that catch remains within sustainable levels. From a social perspective, the
wastage within the groundfish fishery has been reduced significantly. Fish that previously
would be released at sea are now being utilized and verified rather than being wasted.

The improved biological data that is collected from this program, such as piece
counts, releases at-sea, and landed weights, are used in stock assessments and can be
utilized to facilitate rebuilding programs for certain groundfish species. Furthermore, the
auditing program associated with the EM provides high spatial resolution, which allows
DFO to track localized abundance trends and monitor serial depletion of certain species
in certain areas of the Pacific Coast. Lastly, the EM program supplements enforcement
efforts for closed area monitoring of the Pacific Coast. The GPS data acquired during
each trip is verified to ensure fishing did not occur within closed fishing areas. This type
of monitoring would be impossible for enforcement officers to undertake. Likewise,
gathering data from the program would not be feasible if DFO were to undertake this
because of the high costs.

Conservation Impacts Under the Alternative Fishing Plan

This section attempts to evaluate the conservation impacts that may have occurred
under the AFP. The same questions posed above with respect to rockfish mortality and
staying within the limits will be evaluated in this section. Essentially the AFP perhaps
would not have implemented ITQs in the fisheries previously managed using input
controls (rockfish, lingcod, dogfish), but would perhaps have permitted the retention of
rockfish by all groundfish harvesters until such time as the rockfish TACs were achieved.
Once achieved, the fisheries for rockfish and other species would possibly have been
closed. DFO would have also perhaps proceeded with the 100% at-sea monitoring, as
was announced in 2005.
Rockfish Mortality

Under the AFP, might all rockfish mortality have been accounted for on a stock-specific basis? Yes, perhaps the same data on total rockfish mortality would have been available under the AFP and the CGIPP. Under the AFP, there would still have been 100% at-sea monitoring coupled with the requirement to retain all rockfish for all groundfish licences. This would be the same scenario as the CGIPP.

Staying Within the Limits

Would annual total stock-specific rockfish mortality have remained within the scientifically prescribed TACs? This most likely would not have been the case since the AFP might have induced the race for fish scenario described in Chapter 3 of this thesis. Harvesters may not have had an incentive to keep track of their rockfish catch, because their concern may have been to get their target fish (halibut, sablefish, etc.) out of the water before the fishery was closed. Strengthened in the knowledge that the fishery would likely be shut down after their trip, harvesters would probably have kept fishing as long as possible, trying to get all their target fish out of the water before other harvesters, and the TACs were achieved. They probably would have feared that there would not be sufficient rockfish incidental quota to cover their catches. This scenario would have meant that DFO would not get the monitoring data quickly and also that the data would come in all at once, making it more difficult to analyze in a timely manner. Thus by the time DFO realized or estimated the total catch mortality using the DMP and EM programs, the TACs would have likely been exceeded.

This scenario is consistent with what happened in the halibut fishery prior to moving to ITQs as described previously. Based on landed catch alone, the TACs within
the halibut fishery were constantly exceeded. Similarly, in the lingcod example above (Table 8), when there were no pre-determined allocations, harvesters competed to get their fish out of the water and TACs were often exceeded, with areas closed within weeks of the opening. The 100% monitoring would have allowed DFO to accurately confirm by how much the TACs were exceeded, but it wouldn’t be useful for management purposes if it was usable only after the TAC had been exceeded. On the other hand, it is probable that because rockfish TACs would have been achieved quickly, the TACs for many other groundfish species would have been under harvested.

**Additional Impacts**

The race for fish may have also affected the other groundfish species. As described, harvesters might race to catch their fish before rockfish TACs were achieved, thereby closing the fishery. For example, although halibut and sablefish are managed using ITQs, a harvester’s catch could exceed his/her available quota because he or she is more concerned with getting as much fish out of the water as possible rather than keeping track of his or her catch. Moreover, a harvester’s incentive to disregard the monitoring system would increase. As such, this race for fish likely would have ended up with TAC overages for other groundfish species if harvesters were unable to find the quota to cover their overages. Again, the at-sea monitoring would have enabled DFO to accurately capture the total mortality, but the mortality could likely have been in excess of the TACs, as the data would not have been received in a timely manner. The benefits that have accrued to the halibut and sablefish fisheries from the implementation of ITQs, such as the elimination of the race for fish and an incentive to protect their assets (quota),
would be lost. These harvesters might have reverted to the race for fish, just as they had before implementation of ITQs.
Chapter 8: Discussion of Economic Impacts

An asset valuation methodology, described in the Chapter 2, serves as the tool to compare the economic impacts of the CGIPP to those of the AFP. This section explores the change in returns to licence holders over the past five years. The direct costs of the program relate to additional costs of the 100% at-sea monitoring requirement and an enhanced DMP—components of both the CGIPP and the alternative. As described in the research methodology chapter, asset valuation provides an indication of long-term profitability. To compare the economic impacts of this direct cost of the CGIPP to those of the AFP involves comparing the trends in asset values for the various fisheries. The assets for this discussion include fishing licenses and permanent quota holdings. The trend of asset values for each groundfish fishery from 2004 to 2008 is compared below to what might have been the trend under the AFP. Only halibut and sablefish quotas are examined, because they were the only fisheries managed using ITQs prior to 2006 and, therefore, are the only quota that may be held permanently. Although the dogfish and lingcod fisheries did not have a species-specific licence because they are two of the few remaining species left on the original category “C” licence, this licence will be examined as a surrogate. A discussion of the trend in assets for each groundfish commercial fishery follows.

Trend in Assets

The trends in asset values for the commercial groundfish fisheries derived from Stuart Nelson’s reports on Commercial Fishing Licence, Vessel and Quota Values are illustrated in Table 10 (Nelson, 2004; Nelson, 2005; Nelson, 2006; Nelson, 2007; Nelson,
The trend shows that profitability within the commercial groundfish fisheries, for the most part, have not been negatively impacted.

Table 10
*Average Price of Commercial Groundfish Licences (in 2008 Canadian dollars)*

<table>
<thead>
<tr>
<th></th>
<th>Halibut</th>
<th>Sablefish</th>
<th>ZNO</th>
<th>ZNI</th>
<th>Category “C”</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>49,645.00</td>
<td>185,397.86</td>
<td>133,486.74</td>
<td>37,080.39</td>
<td>18,011.00</td>
</tr>
<tr>
<td>2005</td>
<td>58,670.15</td>
<td>211,882.10</td>
<td>155,733.35</td>
<td>37,079.37</td>
<td>18,009.98</td>
</tr>
<tr>
<td>2006</td>
<td>57,865.82</td>
<td>208,977.32</td>
<td>263,311.42</td>
<td>36,571.03</td>
<td>17,763.07</td>
</tr>
<tr>
<td>2007</td>
<td>60,814.91</td>
<td>254,925.00</td>
<td>171,309.60</td>
<td>46,396.35</td>
<td>10,400.94</td>
</tr>
<tr>
<td>2008</td>
<td>53,250.00</td>
<td>250,000.00</td>
<td>126,000.00</td>
<td>45,000.00</td>
<td>8,500.00</td>
</tr>
</tbody>
</table>

Table 11 below shows the average price of permanent quota for halibut and sablefish.

Table 11
*Average Price per Pound of Permanent Quota (in 2008 Canadian dollars)*

<table>
<thead>
<tr>
<th></th>
<th>Halibut</th>
<th>Sablefish</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>35.98</td>
<td>43.40</td>
</tr>
<tr>
<td>2005</td>
<td>37.08</td>
<td>37.08</td>
</tr>
<tr>
<td>2006</td>
<td>30.30</td>
<td>30.30</td>
</tr>
<tr>
<td>2007</td>
<td>33.65</td>
<td>32.63</td>
</tr>
<tr>
<td>2008</td>
<td>35.00</td>
<td>25.00</td>
</tr>
</tbody>
</table>

Several external factors that have influenced commercial fisheries since the implementation of the CGIPP warrant discussion, because they may have also influenced the trend in values (Tables 10 and 11). These factors were not related to the CGIPP and
include high fuel prices, fluctuating exchange rates, the Pacific Integrated Commercial Fisheries Initiative (PICFI), and reduction in TACs.

Since 2006, the increase in fuel prices has put upward pressure on the harvesters’ bottom line by increasing costs and reducing profitability for many harvesters. In addition, the high Canadian dollar affected many harvesters, as a significant portion of product is shipped to the USA. To exacerbate an already small and fragile market, the entrance of PICFI into the commercial quota and licence market has been disruptive. DFO has committed $175 million over five years to PICFI to acquire commercial fishing licences and quota to support greater First Nations participation in commercial fisheries (DFO, 2009c). Lastly, both the halibut and sablefish TACs have been declining since 2006.

*Halibut Discussion*

The value of halibut licences, on average, rose slightly after the first year of integration, but dropped by approximately 12% in 2008 (Table 10). This may have been related to the further decrease in the halibut TAC with poor future projections. Overall the change was not significant, given the external pressures occurring at the time. On the other hand, the value of quota dropped more than 20% in 2006 from 2005 and then increased in 2007 and 2008. Initially, industry participants were concerned that harvesters would not be able to get their full halibut TAC out of the water because they would not have been able to access rockfish quota. As such, harvesters would have exited or sold their quota because of lower expected profitability in the future. After the first year, it became clear that integration would not keep harvesters from getting the halibut quota out of the water. As described in Chapter 7, the rockfish TACs were not fully harvested.
Furthermore, there were efficiency gains associated with the retention of additional species, such as sablefish. Harvesters may now retain and sell their sablefish catch, which previously would have been released. There is no added cost of catching this additional fish because this fish was previously being caught in any case. If exchange rates, fuel prices, and the TAC had not changed, it is likely that halibut licence and quota values would have increased.

Under the AFP, there may have been a significant downward trend in the value of halibut licences and quota; due to the race for fish that might have ensued, rockfish TACs would likely have been achieved before the halibut TAC. As a result, the halibut fishery might have faced a shorter season, which would in turn have reduced profitability for those unable to catch their quota. Furthermore, the race for fish may have affected market prices and product quality, thereby also reducing profitability. Lastly, there may have been no efficiency gains under the alternative plan to help offset the costs of the monitoring program. Although harvesters could have retained an unlimited amount of rockfish, it may not have been enough to offset the costs of the program and the loss associated with an early closure.

In addition, vessel capacity constraints limit the space available to retain additional species, so harvesters might have been more keen to retain the more valuable species, i.e. their target species such as halibut, and therefore there might have been an increased incentive to disregard the monitoring system. There also might have been an increased amount of misreporting, which would have been revealed in the 10% review. Harvesters who failed their audits would be required to take at-sea observers, who are more costly than EM systems. In summary, the economic impacts of the CGIPP on the
return on investment for harvesters seem less significant than what may have happened to long-term profitability under the AFP.

*Sablefish Discussion*

Although the average price of sablefish licences has increased by over 37% since 2004, the average price of quota has fallen significantly. There are two plausible reasons for this. Firstly, the TAC for sablefish has been declining. Secondly, purchases in February 2008 for PICFI totaled 13.1 million Canadian dollars. Although no sablefish licences were acquired, 2.15% of the sablefish TAC (quota) was purchased (DFO, 2009c). Interestingly, an increase in demand for a product in such a small market—only 46 commercial sablefish licenses—would imply an increase in the price, but this has not happened. Industry participants (Censored communication, December 2008), indicate that this occurred through just one transaction, which had a significant impact on the market in 2008: the price of quota fell by 23% (see Table 11). While it is common for large sablefish purchases to be sold at a discounted price, according to industry participants this one transaction set the bar at that discounted price for future sablefish quota purchases for the year. As such the 2008 value represents an anomaly in the market and should be disregarded.

Each of these contributing factors was compounded by the increase in fuel prices and the fluctuating exchange rate in 2007, which likely would have reduced profitability within the fishery irrespective of the CGIPP. Nelson (2008) reports, “The maintenance of high licence values is baffling to industry participants, who believe that, under integrated groundfish fishing, distinctions between various groundfish licences should blur, and values should diminish.” There were also additional efficiency gains garnered by the
sablefish harvesters in 2006, because they were also able to retain their halibut and rockfish without requiring a halibut or rockfish licence.

Under the AFP, each of the above mentioned contributing external factors would have existed; however, the impacts outlined above might have been compounded by the race for fish that would have ensued, and rockfish TACs would likely have been achieved before the sablefish TAC. The race for fish might have closed the sablefish fishery before it achieved the TAC, thereby reducing the profitability of sablefish harvesters. Although quota values have decreased since the implementation of the CGIPP, quota values would have fallen further under the AFP because of the race for fish—without compensatory efficiency gains. Compared to possible impacts under the AFP, the sablefish sector is likely better off, because the significant quota value decrease in 2008 is an anomaly created by the PICFI program.

Rockfish Outside Discussion

The licence value for ZNO (rockfish outside) licences saw the most dramatic increase in value in 2005: close to 70% (Table 10). The value of the ZNO licence spiked before implementation of the CGIPP for two reasons. First, harvesters knew that the fishery was moving to an ITQ system, as this was a key component of the CIC proposal, and they wanted to ensure they owned a licence. Generally speaking, fisheries that are managed using ITQs see a shift in value from the licence to the quota primarily because that is the transferable asset (Nelson, S., personal communication, September 8, 2009). The value becomes capitalized in the ITQ and as such, harvesters knew expected profitability would increase because of the implementation of ITQs. Their willingness to pay was significant.
Secondly, many harvesters were concerned that under the CGIPP they would not be able to access rockfish quota to account for their incidental catch, so they wanted a ZNO licence to guarantee access to rockfish quota. They wanted to ensure access to rockfish quota to secure their target species catch. As a result, many non-ZNO licence holders entered the market to acquire rockfish licences. One of the main reasons the price came back down in 2007 and 2008 is that the integration plan did not require a harvester to have a ZNO licence to keep rockfish and quotas were more easily available than originally thought. As described in the conservation section of this thesis, many of the rockfish TACs were underharvested since harvesters realized that the threat of being shut down due to the incidental catch of rockfish was not as severe as had been anticipated.

Under the CGIPP, ZNO licence holders not only experienced significant increases in the value of their licenses before the program began, but they now also held rockfish ITQ, which was an additional valuable asset. Additional efficiency gains associated with the retention of species such as halibut and sablefish also accrued to ZNO licence holders. Furthermore, before the CGIPP was implemented many areas for rockfish would close early, as TACs were achieved. Since implementation, however, the outside rockfish fishery has enjoyed a 365-day season, allowing harvesters to service the market year-round and eliminating the race for fish. Each of these factors helps to offset the additional costs associated with the monitoring program. Despite increase in fuel prices in 2007 and the monitoring costs, the licence prices in Table 10 indicate increased profitability, indicating that they were not being negatively impacted by the CGIPP.

If the AFP had been implemented, the value of the ZNO licence might have plummeted. All the groundfish fisheries would have had the ability to retain rockfish (no
ITQ), therefore, there would be no need for a ZNO licence to cover incidental catch. The amount of rockfish that a ZNO licence holder may have previously been able to catch in one season may have been reduced, if all the other groundfish harvesters retained rockfish as well. As such, this would have resulted in a decrease in profits and further decrease in the licence value. The AFP might have focused on rockfish, because the original guiding principles were developed in response to the conservation concerns raised by Yamanaka and Lacko (2001). In addition, the race for fish might have severely affected the market price of rockfish because of the poor quality of product and a considerably shorter season. Profitability would likely have dropped significantly, and the additional value associated with an ITQ might not have materialized. The ZNO fishery has seen an increased economic benefit since the implementation of the CGIPP; under the AFP, the ZNO fishery might have seen a considerable drop in profitability.

Rockfish Inside Evaluation

The ZNI licence increased in value by more than 25% (Table 10) for many of the same reasons mentioned above. The value of the ITQ is capitalized in the licence because, while under a pilot, ITQs are not permanently transferable (unlike sablefish and halibut). In addition, other groundfish licence holders, primarily dogfish harvesters fishing the inside, required sufficient rockfish quota to cover their incidental catch when harvesting dogfish. However, there were also some halibut harvesters wishing to fish the inside who also required ZNI rockfish quota. As the weather deteriorates during the winter months, dogfish harvesters move inside to fish their target species. As such, they would require access to rockfish quota to cover their incidental catches. This increase in demand likely augmented the value of the ZNI licence. ZNI harvesters could also retain
halibut to help offset the additional monitoring costs. However, the DFO annual catch summary reports show very little lingcod and halibut landed by this fishery. It would appear that these harvesters have some opportunities available to capitalize on these efficiencies. Inside rockfish harvesters under the CGIPP also acquired the additional value of ITQ.

Under the AFP, the consequences to this fishery may not have been as severe as described above for the ZNO fishery. ZNI harvesters might have been competing primarily with dogfish and some halibut harvesters, and more than likely the outside rockfish fishery would have shut down quickly, leaving the inside fishery as the only source of supply for the live rockfish market. If so, this might have further increased the value of the ZNI licence. Profitability in the ZNI fishery has increased since the CGIPP was implemented, however the same trend may also have been true under the AFP.

*Lingcod and Dogfish Discussion*

Determining changes to asset values within the lingcod and dogfish fisheries is complex, because neither had a species-specific licence nor were they quota fisheries. Every vessel-based licence holder could fish for lingcod and dogfish through the schedule II privilege included with each vessel-based licence. The closest surrogate to a species specific licence for lingcod and dogfish would be to evaluate the trend in the “C” licence, however, this licence also includes other species such as tuna. A significant decline in the value of the “C” licence is shown in Table 10. There are several possible reasons for the decline. Nelson’s 2008 report states that because quota is effectively separable from the “C” licence, the values have lessened. In addition, the “C” licence was valued since splitting married licences, such as halibut and salmon for example, licensing rules require
the acquisition of a “C” licence of the right length. In 2008, DFO began a review of licensing rules, with the desire to make changes in the near future. An integral part of these changes was to be elimination of rules for splitting licenses as well as plans to allow for the separation of lingcod and dogfish from the “C” licence. News of these changes very likely travelled within the industry. If implemented, these changes would have diminished the value of the “C” licence. Lastly, recent restrictions on the tuna fishery regarding allowable fishing vessel days by country annually may have reduced the fishing opportunities for the “C” licence in the tuna fishery, further eroding the value of the “C” licence.

The decline in the value of a “C” licence is not completely indicative of a loss in profitability for lingcod and dogfish harvesters, as only a small percentage, 15%, of these harvesters own a “C” licence. Many fish for lingcod and dogfish using a vessel-based groundfish or salmon licence. Under the CGIPP, both fisheries now have the benefit of an additional asset—their ITQ. Although transfers are temporary during the pilot, many harvesters have entered into trust agreements that effectively allow for permanent transactions to occur. As such, the value of these fisheries has become embedded in the quota. Lingcod quota ranges from $8 to $10 per pound, and dogfish quota ranges from $0.10 to $0.25 per pound (Nelson, 2008). Prior to the CGIPP, these fisheries were not managed using ITQs and so did not have this additional asset. Additional efficiency gains, such as the ability to retain rockfish, halibut, and sablefish, help to offset the additional monitoring costs. In addition, the lingcod fishery, like to the ZNO fishery, would close in some areas within weeks of the opening. As the lingcod fisheries manager for DFO in 2005, the year before implementation of the CGIPP, I opened an area for
lingcod and closed it within three weeks because the TAC had been achieved. The
determination to close the fishery was based on my best estimate, as the fishery manager,
of how much might be landed by the vessels on the water coupled with the landed catch
that had been verified to date. Since the CGIPP, the lingcod fishery has not been closed
before its official November 15th closure.

Under the AFP, lingcod and dogfish harvesters would have only had the added
benefit of retaining rockfish. As noted above, the race to catch their fish before rockfish
TACs were achieved would have negatively influenced their profitability. The asset that
holds value for lingcod and dogfish harvesters is the quota they now hold; even though
the quota is not permanently transferable because there is no single licence for these
fisheries, the value is embedded in the quota, not a licence. The value of this asset is
significant, considering that without the CGIPP, there would have been no lingcod and
dogfish ITQs. Had the alternative plan been implemented, there likely would have been a
loss in the value of a “C” licence, because of the potential changes to the licensing rules
and changes to the tuna fishery. However the value may not have declined as much. This
discussion has highlighted that the value of the “C” licence is not indicative of the
profitability of the lingcod and dogfish fisheries. Instead, the value of the quota they now
hold reflects the profitability of the fisheries; under the AFP, this might not have been so.

**Summary**

In either scenario, with the CGIPP or hypothetically under the AFP, 100%
monitoring and an enhanced DMP may have existed, including the associated costs.
Under the CGIPP, although there have been additional costs to harvesters, there have also
been efficiency gains. These efficiency gains and the additional asset values for lingcod,
dogfish, and rockfish (of their ITQ) have made these fisheries more profitable for harvesters. Given the discussion with respect to the trend in assets for the sablefish quota and “C” licence, the asset values of the groundfish fisheries have either increased or remained stable, and as such the long term profitability of these fisheries seems positive. Although there may be additional costs, the asset values have not been negatively affected because of the CGIPP alone. Had the AFP been implemented, the race for fish and the added costs of monitoring might have been the factors with the greatest impacts on profitability and hence licence values. The efficiency gains mentioned above might not have been realized under the alternative plan.

It is also worth mentioning as a general observation that under the AFP there may have been cascading infrastructure impacts, given the discussion above. The viability of major processors and facilities would have been compromised if groundfish fisheries were shut down early, and the subsequent impact on fuel docks, for example, would then have been significant. It is important to note that the commercial groundfish fisheries account for 45% of the harvest of seafood in BC (BC Ministry of Environment, 2007). Furthermore, the wholesale value of commercial groundfish in BC is $338.7M (BC Ministry of Environment, 2007). Groundfish fisheries are the backbone of the commercial fishing industry; if these fisheries were to be compromised it would jeopardize the infrastructure for other commercial fisheries as well. The social impacts of the CGIPP and the AFP, including the effects on coastal communities, are discussed in Chapter 9.
Chapter 9: Discussion of Social Impacts

Some of the conservation and economic impacts described above may also result in additional social impacts on fleet composition, fishing employment, and coastal communities. Using the limited available data, an initial discussion of the social impacts of the CGIPP compared to the potential impacts under the AFP is provided.

Impact on Fleet Composition

At the onset of the CGIPP, there was concern voiced by the Minister of Fisheries and Oceans regarding the impact to smaller groundfish vessels because of the increased monitoring costs. Since the CGIPP was implemented, there has been a decrease in the number of active vessels since 2005, with the exception of sablefish harvesters, which have increased (Table 12).

Table 12
Active Commercial Groundfish Vessels 2005 to 2008 (DFO, 2009a)

<table>
<thead>
<tr>
<th>Fishery</th>
<th># of vessels 2008</th>
<th># of vessels 2007</th>
<th># of vessels 2006</th>
<th>Average # of vessels 2003-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lingcod</td>
<td>38</td>
<td>28</td>
<td>38</td>
<td>70</td>
</tr>
<tr>
<td>Dogfish</td>
<td>16</td>
<td>17</td>
<td>17</td>
<td>36</td>
</tr>
<tr>
<td>Sablefish</td>
<td>See 2007</td>
<td>40</td>
<td>42</td>
<td>35</td>
</tr>
<tr>
<td>ZN Inside</td>
<td>11</td>
<td>16</td>
<td>18</td>
<td>25</td>
</tr>
<tr>
<td>ZN Outside</td>
<td>33</td>
<td>48</td>
<td>35</td>
<td>73</td>
</tr>
<tr>
<td>Halibut</td>
<td>169</td>
<td>182</td>
<td>185</td>
<td>221</td>
</tr>
</tbody>
</table>
The 2007/2008 sablefish season was extended by approximately 7 months to facilitate a move to a common season date for all groundfish fisheries. As such, 2007 sablefish data also includes the extended season that ended February 20, 2008. A preliminary review of the integration program by Fraser and Associates (2008) indicates that although there are fewer smaller vessels, about 20, in the halibut sector, the production of these remaining smaller vessels has increased substantially. Small vessels in this report are categorized as those vessels shorter than 40 feet in length. Fraser suggests that one effect of integration may have been to encourage more equal production of all vessel size categories rather than concentrating production on the largest vessels.

The decrease in the number of active vessels could be attributed to several factors. The costs of the monitoring program may have been too high for some operators, even though there were efficiencies to be had. The operating rules are complex, and some harvesters, who were close to retirement, may have decided it was the optimal time to exit the fishery. Some may have decided to simply lease their licence and quota because they did not want to adapt and fish under the new system. Those harvesters who did not have the fishing skills to harvest in a manner that minimizes incidental catch would likely have left the fishery. The CGIPP rewards those harvesters who fish cleanly. The introduction of ITQs in each of the groundfish fisheries likely allowed more efficient operators to lease fish from less efficient operators. Leasing is a natural evolution of harvesters adjusting to changes in the fishery and is necessary within the CGIPP for harvesters to account for their incidental catches. Harvesters had no option but to lease, as permanent transfers were not permitted.
Had the AFP been implemented, there might have been the same costs of monitoring without the additional efficiency gains. Furthermore, as previously described, the race for fish might have resulted in shortened seasons and perhaps additional losses for smaller operators who were unable to compete. Although there has been some rationalization of the commercial groundfish fishing fleet since the CGIPP, this is no more than what might have occurred under the AFP. In fact, there might have been further rationalization under the AFP, given that the fleet still would have endured the costs of monitoring, albeit without additional efficiency gains to offset the costs. The groundfish fleet is no worse off under the CGIPP than it would have been under the AFP.

**Impacts to Fishing Employment**

The decreased number of vessels left in the fleet would suggest a proportional increase in unemployment, but this is not necessarily so. The opportunity costs within the job market need to be considered. A study prepared by GSGislason & Associates Ltd (2008) for DFO on the employment impacts of ITQ fisheries on the Pacific coast indicates that “most fisheries show an increase in wages and person-year employment under ITQs.” At the same time, the report concludes that there are job losses for some individual crew members under ITQ fisheries management. Loss of employment within the groundfish fisheries should only be considered as a negative impact if those that find themselves unemployed are unable to find employment elsewhere. People leaving the fishery may have found a job in the construction industry or elsewhere. In fact, the unemployment rate for the duration of the pilot (including Vancouver Island) has been very low, as shown in Table 13 below. The information in this table was derived from BC Statistics (2009).
Table 13
Unemployment Rates in BC and Vancouver Island from 2002 to 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>BC unemployment rate (%)</th>
<th>Vancouver Island unemployment rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>8.5</td>
<td>8.7</td>
</tr>
<tr>
<td>2003</td>
<td>8.0</td>
<td>8.6</td>
</tr>
<tr>
<td>2004</td>
<td>7.2</td>
<td>7.9</td>
</tr>
<tr>
<td>2005</td>
<td>5.9</td>
<td>6.3</td>
</tr>
<tr>
<td>2006</td>
<td>4.8</td>
<td>4.9</td>
</tr>
<tr>
<td>2007</td>
<td>4.2</td>
<td>4.3</td>
</tr>
<tr>
<td>2008</td>
<td>4.7</td>
<td>4.3</td>
</tr>
</tbody>
</table>

One could argue that for any previously employed members of the groundfish fisheries who found themselves unemployed, the opportunity to find a replacement job would have been high. In addition, as mentioned above, some members of the industry may have left because they were nearing the age of retirement. Furthermore, the monitoring program has provided additional jobs within the groundfish fisheries. Shawn Stebbins, President and CEO of Archipelago Marine Research, the service provider for groundfish monitoring services, stated “…implementation of electronic monitoring for the groundfish hook and line and trap fisheries resulted in the creation of 12 new full time equivalent professional and technical positions, both in the head office in Victoria and the regional offices” (S. Stebbins, personal communication, February 5, 2009).

If the AFP had been implemented, harvesters might have been unemployed for two reasons. First, they might have been only partially employed, due to the shorter seasons; secondly, some vessels would not have fished in a more competitive fishery, which might have resulted in an increased number of unemployed individuals. With
shorter seasons, even though the monitoring program would have existed, fewer
employees would have been required. As was the case with the CGIPP, those who found
themselves unemployed under the AFP would likely have been able to find employment
(if they wanted to) because unemployment rates were low. Again, the groundfish fleet is
no worse off under the CGIPP with respect to fishing employment than it would have
been under the AFP.

Impacts to Coastal Communities

The majority of commercial groundfish landings occur on Vancouver Island,
thereby stimulating the economies of coastal communities (GSGislason, 2008). One
indicator of impacts on coastal communities would be the change in landings that occur
in those areas, which would in turn affect the processing sector, a key component of the
economic stimulus for these communities. The halibut landings in two of the largest ports
in coastal communities in BC as a proportion of the TAC from 2005 to 2008 are detailed
in Table 14. Halibut is used as an indicator as it is considered the largest hook and line
fishery, therefore having the most significant impact.

Table 14
Halibut Landings in Port Edward and Port Hardy Relative to Change in TAC (DFO,
2004-2008)

<table>
<thead>
<tr>
<th>Fishing season</th>
<th>Commercial TAC</th>
<th>Port Edward halibut landings (lbs)</th>
<th>Change (%)</th>
<th>Port Hardy halibut landings (lbs)</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>12,141,000</td>
<td>3,594,981</td>
<td>30%</td>
<td>4,801,909</td>
<td>40%</td>
</tr>
<tr>
<td>2005</td>
<td>11,657,600</td>
<td>3,115,055</td>
<td>27%</td>
<td>5,037,435</td>
<td>43%</td>
</tr>
<tr>
<td>2006</td>
<td>11,631,200</td>
<td>3,235,041</td>
<td>28%</td>
<td>4,890,005</td>
<td>42%</td>
</tr>
<tr>
<td>2007</td>
<td>10,089,400</td>
<td>2,846,547</td>
<td>28%</td>
<td>4,094,301</td>
<td>41%</td>
</tr>
</tbody>
</table>
There have been no significant changes in landings at either of these two ports. Furthermore, Port Alberni Mayor Ken McCrae (personal communication, July 21, 2009) in a telephone conversation with me said that the CGIPP has provided the community with a 365-day processing operation and that he could not remember the fish plants in Port Alberni being open for this length of time at any time in the past. According to Mayor McCrae, the implementation of the CGIPP has resulted in employment for a core segment of the population of Port Alberni who would not have otherwise been employed.

It is harder to speculate what the social impacts would have been under the AFP. Under the AFP, the race for fish might have led to significant supply gluts and poor quality fish being processed, requiring more product to be frozen. In addition, a greater proportion of the landings likely would have occurred in the Vancouver area, where the freezing facilities are larger (GSGislason, 2008). A shorter season would also have meant less stability for the processing sector. Processing plants would only have product for a limited period of time during the open season and would also have less product to process, because TACs for other species might have been underharvested. Furthermore, as mentioned in Chapter 8, shortened seasons might have led to a loss of industry infrastructure. With unpredictable seasons, processing plants, fuel docks, and ice houses might not have continued to be viable. The impacts to coastal communities in this scenario due to the loss of these infrastructures would have been significant. In summary, this discussion implies that impact to coastal communities under the CGIPP does not seem as significant as the impact that might have occurred had the AFP been implemented.
Chapter 10: Discussion of Co-Management Arrangements

This chapter will focus on the effectiveness of the two new co-management arrangements, the CGIAC and CIC. As described in Chapter 2, three key questions are used to assess the effectiveness of these arrangements:

1. Were the new co-management processes able to reach a consensus regarding new management arrangements needed to address DFO’s rockfish conservation problem and objectives?
2. If yes, were the co-management arrangement’s management recommendations accepted and implemented by DFO?
3. If yes, were the new management recommendations able to successfully address DFO’s rockfish conservation concerns as well as its guiding principles?

Answers to these questions are discussed below.

Reaching Consensus

Only the CIC terms of reference required consensus when putting forward recommendations, and it was achieved in the form of the CIC pilot proposal (Diamond Management Consulting Inc., 2005). In my conversations with members of the CIC over the past four years, in my capacity as a groundfish fishery manager, it has become clear that achieving consensus among the commercial groundfish fisheries was not an easy task because these fisheries had never come together in a cooperative manner before. Breaking through the barriers and historically entrenched positions was difficult. However, in the end, each of the members of the CIC realized that they needed to work together to develop a proposal because in their view, the alternative, having DFO develop
a plan, would be far worse. In other words, there was a strong incentive for working toward a consensus.

Conversely, the CGIAC did not achieve consensus, but then, the TOR for this body did not require it. The pilot proposal developed by the CIC was presented to members of the CGIAC for input. Concerns were raised by various interested parties at the table. The four most discussed are summarized below:

1. The Sport Fish Advisory Board (SFAB) representatives stated repeatedly that although the SFAB respected the CIC’s attempt to account for all rockfish, they did not feel that ITQs were the only way to provide such accounting and were in fact opposed to ITQs. (CGIAC Minutes, January 14, 2005, April 15, 2005, and May 30, 2005).

2. From a process perspective, the SFAB also noted that while the CGIAC had a mandate to “provide formal advice to DFO” (CGIAC TOR Appendix B), the CGIAC had not formally approved the CIC proposal and yet it had been approved by DFO and implemented (CGIAC Minutes, September 21, 2006).

3. The Nuu Chah Nulth Tribal Council (NTC) and BC Aboriginal Fisheries Commission representatives stressed repeatedly that there had been no consultation with First Nations and that First Nations allocations needed to be sorted out before the commercial fishery moved to ITQs (CGIAC Minutes, April 15, 2005, May 30, 2005, and January 14, 2005).

4. The representative from the coastal communities reported that the CIC proposal had been discussed in their advisory meetings and the main concern voiced was
Note that nothing in the CGIAC TOR required the participants to “approve” the CIC proposal. DFO solicited the CGIAC for advice on the content of the proposal and two key themes emerged: lack of consultation with First Nations and the recreational sector’s opposition to ITQs. No consensus was achieved within the CGIAC, but the position of each interest group was reported in the minutes. DFO considered all advice when proceeding with the implementation of the pilot.

It is also important to note that subsequent to the NTC’s statements on the lack of First Nations consultations, legal action was taken against the Minister of Fisheries and Oceans Canada. The case, *Ahousaht First Nation v. Canada (Fisheries and Oceans)*, 2007, was predicated on the notion that Canada’s federal fisheries Minister failed to uphold the honour of the Crown and failed to fulfill his duty to consult and accommodate the NTC before implementation of the CGIPP (Oakes, 2007). The judge, Justice Pierre Blais, ruled in favor of the Crown, saying that the applicants were provided sufficient opportunities to participate in the process to satisfy the duty of the Minister to consult and dismissed the judicial review application (Oakes, 2007). The NTC appealed this decision, but on June 12, 2008 the Court of Appeal dismissed the appeal and upheld the decision of Justice Blais (Isaac, 2008).

*Acceptance of Recommendations*

The consensus proposal put forward by the CIC was, for the most part, accepted and implemented by DFO. The Minister of Fisheries and Oceans Canada approved the major management changes proposed in the plan on a three-year pilot basis. The major
accepted components included implementation of ITQs in the lingcod, dogfish and rockfish fisheries; ability to retain all groundfish species on all commercial groundfish licences; implementation of common groundfish management areas; transferability of quota between fisheries/licence types; accountability for all groundfish catch (not only rockfish); and 100% at-sea monitoring. In April 2006, DFO implemented a single management plan for all commercial groundfish fisheries based on the CIC recommendations that included each of the above measures.

*Achieving Success*

Did the proposal succeed in achieving DFO’s objectives? Chapter 7 showed that under the CGIIP, DFO’s conservation objectives were indeed achieved: the commercial catch remained within the scientifically prescribed TACs, and the new monitoring program, coupled with full accountability, has also allowed for total mortality for groundfish species to be known. The *Inshore Rockfish Conservation Strategy* (DFO, March 2002) also called for improved catch monitoring and the need to reduce harvests (Yamanaka and Lacko, 2002), and each of these was also achieved as described in the previous chapter. Essentially the proposal put forth by the CIC, which was accepted, was able to successfully address DFO’s rockfish conservation concerns and meet DFO’s objectives. There were also additional conservation benefits gained, as discussed in Chapter 7, because of the CGIIP.
Chapter 11: Conclusions and Recommendations

Conclusion 1: Objectives Achieved

The CGIPP achieved DFO’s conservation objectives. The new monitoring program has allowed all rockfish mortality to be accounted for on a stock specific basis. Moreover, all catch, including releases at sea, remained within the scientifically prescribed TACs for all groundfish species, including rockfish. While the AFP would have allowed for the proper accounting of rockfish mortality, some species TACs may have been exceeded due to the race for fish. At the same time, many species’ TACs may have been left underharvested, because rockfish TACs likely would have been achieved quickly. The AFP, however, would not have allowed for an orderly fishery. Fisheries managers would have been left to estimate potential catches and close fisheries because of the delay in EM data. This is no different than the management techniques used prior to the CGIPP, which were not meeting conservation objectives.

Achieving these conservation objectives required additional monitoring costs to be incurred by harvesters. Examination of the trend in asset values overall indicates that long-term profitability in the commercial groundfish fisheries has improved or remained stable. The same results could not have been achieved under the AFP. The discussion in this thesis indicates that the AFP would have severely impacted the long-term profitability of the fishery due to the race for fish, because no additional efficiency gains would have accrued. Asset values under the AFP would most likely have fallen substantially.
Based on the available data, which is sparse, the social impacts of the CGIPP seem minimal, especially when compared to the potential impacts under the AFP. Although there has been some rationalization of the fleet, this is to be expected whenever regulatory changes are implemented. What is important is that the remaining smaller vessels have increased their production (Fraser and Associates, 2008). This would help offset the additional costs. The CGIPP has also allowed for processing operations to remain functional for the entire year in Port Alberni, something that had not previously been possible (K. McCrae, personal communication, July 21, 2009). Had the AFP been implemented, the race for fish would have marginalized smaller operations. In addition, the fishing seasons would have been much shorter and as such employment impacts would have been significant. Furthermore, the potential longer term infrastructure impacts, for example closure of plants, ice houses, fuel barges, would have had cascading impacts on the industry and local communities. This latter point is significant, as the groundfish fisheries can be considered the backbone of the fishing industry. From a conservation, economic, and social perspective, the commercial groundfish fishery is better off having implemented the CGIPP than the AFP.

Recommendation: Proceed with the permanent implementation of the CGIPP within the commercial groundfish fisheries in British Columbia.

Conclusion 2: Individual Accountability—A Key Ingredient

A key premise of the CGIPP was the requirement for individual accountability for all catch. This guiding principle was the precursor to each of the management techniques that followed. The complexities of multi-species fisheries require a holistic approach to fisheries management. To achieve individual accountability in multi-species fisheries,
accurate and defensible catch information must be obtained and a mechanism for harvesters to “account” for this catch must be provided. As such, a management system in a multi-species fishery such as the BC groundfish fishery, which requires individual accountability for all catch, benefits from the implementation of ITQs, transferability amongst and between licence categories, and comprehensive at-sea and dockside monitoring. Each of these management techniques work in combination to achieve the principle of individual accountability. Bruce Leaman, Executive Director of the IPHC, says “the implementation of the CGIPP for BC hook and line fisheries, with its attendant monitoring and accountability requirements, is one of the most profound developments in fisheries management that I have seen in the past 30 years” (B. Leaman, personal communication, February 3, 2009). Individual accountability is a key ingredient for sustainable fisheries. Scott Wallace, a sustainable fisheries analyst for the David Suzuki Foundation, believes “the principles of full catch accountability and defensible catch limits are a prerequisite for any sustainable multi-species fishery” (S. Wallace, personal communication, February 9, 2009).

**Recommendation 2:** Multi-species fisheries aspiring to achieve “sustainability” status should consider including individual catch accountability as a founding principle.

**Conclusion 3: Successful Co-Management Model**

The experience of the two co-management arrangements created to facilitate the development of the CGIPP reconfirm the propositions presented in this thesis, that stakeholder representation is dependent on the management task being considered. The intent of the CGIAC was to include all interested parties in the process to better understand how any changes to commercial management might affect their benefits from
and access to the resource, both at the time and in the future. This was an appropriate mandate for this body. Furthermore, the mandate of the CIC—to develop the detailed management plan for the commercial groundfish fisheries—also seems to have been quite appropriate.

One can now conclude from the discussion in the previous chapters that the CIC developed a more successful management plan to address DFO’s conservation objectives than would have been developed had DFO implemented the AFP. This is because members of the CIC had both the incentive and the appropriate knowledge. Development of the CGIPP could not have occurred at the CGIAC, because their interests, stake in the outcome, and philosophical views were not the same. Moreover, CGIAC did not possess the necessary knowledge to deal with the specific task of integrating the commercial fisheries.

One could propose that the CGIAC failed for several reasons: (a) concerns raised by other interest groups at the CGIAC were not heeded; (b) the CGIAC never “approved” the CIC proposal; and (c) the CGIAC dissolved in 2006. The common concern raised by the two prominent interest groups of the CGIAC (First Nations and the recreational sector) was their philosophical opposition to ITQs. Certainly, all concerns raised by interest groups were considered and as such, the Minister of Fisheries implemented the program as a three-year pilot. The ITQs within the three new fisheries were only permitted to be temporarily transferred during the duration of the pilot. Permanent program status would not occur until such time as the pilot was approved by the Minister. The evidence presented and subsequent discussion in this thesis demonstrates that the impacts, had ITQs not been implemented, would have been far more significant.
Perhaps the structure of the two management bodies was flawed. Having the CIC as a subcommittee of the CGIAC that reported to them implicitly provided the CGIAC with an unintended role. This structure implied a hierarchy in which proposals made by the CIC were to be “approved” by the CGIAC. However, this was not the intent. The CGIAC did not have any decision-making authority; it was simply intended to provide a forum for discussion. Dissolution of the CGIAC in late 2006 does not translate into a failure of the process. The intent of the CGIAC was to ensure that all users of groundfish resources had a forum to bring forward concerns associated with the impact of the commercial proposal on their sectors. At the time, no multi-interest advisory process existed for groundfish. The CGIAC was a single-purpose entity, the entity had served that purpose by the end of 2006, and CGIAC was no longer necessary. Unfortunately, the TOR did not make it clear that this body was a single-purpose entity.

Nonetheless, bringing together multiple interests to review a sector-specific proposal and raise possible concerns was a good model. So too, was bringing together commercial industry participants to collaborate on the development of a management plan that was specific to the groundfish commercial fisheries. This two-pronged co-management model resulted in a new commercial management regime that met the objectives of DFO, while minimizing any social and economic impacts compared to what may have occurred under the AFP. The Regional Director General of Fisheries and Oceans Canada in BC, Paul Sprout, believes “the CGIPP demonstrated a powerful model of collaboration that brought together multiple interests with diverse perspectives to produce a remarkable outcome. If anything points to what can be accomplished when parties share a common need for change, understand the importance of leadership and
persevere in spite of obstacles, it is the CGIPP” (Sprout, P., personal communication, February 6, 2009).

**Recommendation: When designing co-management arrangements to address a specific management task, bring together those interests with the appropriate knowledge and incentive. The notion of bringing all interest groups together to address a specific management task will inevitably fail. Bringing these same interests together, however, to review and provide observations on the impacts of the proposal will be more effective in achieving the desired outcome of inclusivity.**

**Conclusion 4: Successful Co-Management Requires Empowerment**

In 2003, DFO, gave clear directions to industry on their conservation concerns and what the minimal requirements were for the future, and then empowered stakeholders (primarily through the CIC process) with the ability to develop their own solutions for consideration by the Minister. The Minister still has the ultimate decision-making authority, but industry also has a meaningful role in the decision-making process. Of equal significance is that the Minister accepted industry's solutions in 2006 and continues to consider industry solutions on an ongoing basis as the program is modified in-season and over the longer term. This thesis has demonstrated that DFO could not have developed such a plan independently.

Despite the fact that prior to the CIC there was a long history of industry groups not cooperating with each other and trying to convince DFO that their ideas were of greater merit than those of competing industry groups, it was in the best interest of industry participants to collaborate and develop a plan that met their needs while meeting the requirements of DFO. Moreover, the CIC consensus process now requires industry
groups to convince each other or compromise if they want to enact change. With a significant stake in the design of the plan, industry had a greater incentive to collaborate to make it work. This process also helped to gain industry acceptance of the management changes. When consulting on the pilot plan, DFO presented the proposal jointly with CIC members. This carried far more weight with industry participants than if DFO had come to them first with their own proposal. “Developed almost exclusively by the industry itself, under broad guidelines from DFO, the CGIPP provides harvesters with the regulatory and monitoring framework that allows them to use their own creativity in optimizing multispecies harvest and reducing incidental catch mortality” (B, Leaman, personal communication, February 3, 2009).

Recommendation: The development of co-management arrangements should include clear objectives, expectations, and true empowerment of the body to develop initial as well as ongoing recommendations for consideration.

Conclusion 5: Ecosystem-Based Approach to Management—Two Pronged

Conclusion 4 (Successful Co-Management Requires Empowerment) supports the notion that co-management helps government achieve its desired fisheries management changes. Some authors in the literature review (Meffe et al., 2002; Hilborn, 2004; Sissenwine and Murawski, 2004) wrote about the importance of a more inclusive approach that involved stakeholders. The CGIPP supports this notion. An ecosystem approach requires fisheries management to take into consideration impacts on incidental catches, benthic habitat, and the larger ecosystem in which species reside. This ecosystem-based approach requires significant changes to the more traditional fisheries management techniques, therefore, requires the appropriate stakeholders in the
development of such a plan to address the necessary requirements under this type of management regime.

The CGIPP attempt is the first step in a more ecosystem-based approach to groundfish fisheries management with respect to the impact on incidental catches, but more work is required to address the other aspects of ecosystem-based management. Integration of the groundfish fisheries occurs along a continuum. The plan currently in place takes the initial few steps along this continuum, but there is a longer road to travel. Government and the CIC will continue to collaborate to meet DFO’s objectives for ecosystem-based management. DFO’s ecosystem approach, requires that fisheries management decisions consider the impact of the fishery not only on the target species but also on non-target species, seafloor habitats, and the ecosystems of which these species are a part (DFO, 2009c). These objectives cannot be achieved without impacting industry participants and therefore require the active involvement of industry in a meaningful manner. This thesis clearly supports this notion—DFO on its own may have been able to begin to achieve its ecosystem approach objectives, but the impact on industry would have been much higher if the AFP had been implemented.

Recommendation: Fisheries wishing to move in the direction of an ecosystem-based approach to management must acknowledge that the approach extends beyond merely management changes to also include a strong co-management arrangement as suggested in Conclusion 4.

Concluding Remarks

The CGIPP has allowed the commercial groundfish fisheries to take the first and most crucial step towards a more ecosystem-based approach to management, which
includes a strong co-management structure. The CGIPP can be described as “a model for how biological diversity objectives can be managed within a commercial fishery” (S. Wallace, personal communication, February 9, 2009). The evolution of commercial groundfish fisheries from limited entry licensing regimes, which did not address the incidental catch of species, to a more sustainable management system whereby all catch, including releases at sea, was accounted for by every harvester, has been quite remarkable. Of even greater significance is that the harvesters themselves developed and implemented this plan. In conclusion, the words of Bruce Leaman perhaps provide the most appropriate summary of this thesis: “…this program can be a model for the future development of fisheries management programs around the world” (B. Leaman, personal communication, February 3, 2009).
References

Ahousaht First Nation v. Canada (Fisheries and Oceans), FC 567, 2007.


## Appendix A

### Lexicon

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accountability</td>
<td>All harvesters are required to account for or accurately record all catch, both retained and released, for all species when fishing. As such, all catch becomes “accounted” for. Verification of accountability occurs through the monitoring program.</td>
</tr>
<tr>
<td>Advisory committees</td>
<td>Groups of stakeholders, established by DFO, to provide advice on fisheries management issues.</td>
</tr>
<tr>
<td>Alternative Fishing Plan (AFP)</td>
<td>If the CIC had not developed their proposal to achieve DFO’s guiding principles or if DFO had not accepted their proposal, DFO would have implemented its own plan, called the AFP in this thesis. This plan would have included 100% at-sea monitoring, 100% dockside monitoring, and full retention of rockfish by all commercial groundfish fisheries. As rockfish TACs were achieved either by species or area, the area would be closed to all commercial groundfish harvesters for all species.</td>
</tr>
<tr>
<td>Annual vessel caps</td>
<td>The maximum of a particular species a commercial groundfish vessel can retain in one fishing season.</td>
</tr>
<tr>
<td>Asset</td>
<td>An item of value. For the purpose of this thesis, assets include commercial groundfish licences and permanent commercial groundfish quota.</td>
</tr>
<tr>
<td><strong>At-sea monitoring</strong></td>
<td>The monitoring of catch that occurs while at-sea (while fishing). For the purpose of this thesis, at-sea monitoring refers to the use of on-board observers or electronic monitoring.</td>
</tr>
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<td>-----------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>At-sea observers</strong></td>
<td>Persons aboard a vessel who are responsible for recording all catch, both retained and released, by species while a harvester is on a commercial groundfish fishing trip.</td>
</tr>
<tr>
<td><strong>C Licence</strong></td>
<td>The first commercial fishing licence in BC that allowed for the harvest of any species of fish. Slowly, species were removed from the “C” licence to species-specific licences such as the “L” licence for halibut. Today only a handful of species remain on the “C” licence, including dogfish and lingcod. The “C” licence, which is also referred to as a Schedule II privilege, is attached to every vessel-based licence.</td>
</tr>
<tr>
<td><strong>Carryover</strong></td>
<td>If a harvester catches in excess of his quota, this is referred to as a carryover of an overage. The excess amount is removed from the licence the following season. If a harvester catches less than his quota, this is referred to as a carryover of an underage. This additional fish is added to the licence the following season. There are limits in place for how much carryover is permitted for each commercial groundfish species.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition/Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Commercial</td>
<td>One of the two co-management bodies developed by DFO to facilitate the development of a plan that would address DFO’s guiding principles. CHIAC was the larger multi-stakeholder co-management body and was dissolved at the end of 2006.</td>
</tr>
<tr>
<td>Groundfish Integrated Advisory Committee (CGIAC)</td>
<td>The Commercial Groundfish Integrated Pilot Program, the subject of the evaluation for this thesis. The components of this plan were recommended by the CIC to the Minister of Fisheries and Oceans Canada, who accepted the plan as a three-year pilot program. The program was extended for one additional year to allow for a full evaluation to occur.</td>
</tr>
<tr>
<td>Commercial Industry Caucus (CIC)</td>
<td>The Commercial Industry Caucus, a sub-committee of the CGIAC. This body included representatives from each of the commercial groundfish fisheries and operated through consensus. This body developed the pilot proposal that was subsequently approved, as a pilot, by the Minister of Fisheries and Oceans Canada.</td>
</tr>
<tr>
<td>Coastal communities</td>
<td>Communities outside of the Lower Mainland, often land and sea areas that border the shoreline. For the purpose of this thesis, coastal communities refer to areas that border the shoreline on Vancouver Island, Queen Charlotte Islands, and the Northern Coast of BC.</td>
</tr>
<tr>
<td>Control measures</td>
<td>See management techniques.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Co-management</td>
<td>Advisory processes whereby DFO and stakeholders work collaboratively to manage fish resources.</td>
</tr>
<tr>
<td>Department of Fisheries and Oceans (DFO)</td>
<td>A federal government department responsible for delivering programs and services that support the sustainable use of aquatic resources.</td>
</tr>
<tr>
<td>Dockside Monitoring Program (DMP)</td>
<td>Shore-based monitoring whereby a DFO-designated observer counts and weighs all landed catch from all commercial groundfish vessels once fishing has completed.</td>
</tr>
<tr>
<td>Efficiency gains</td>
<td>Financial productivity. For the purpose of this thesis efficiency gains refer to the financial productivity associated with the ability to retain additional commercial species that can be sold for financial gain. For example, prior to the CGIPP sablefish harvesters could not retain halibut, but now they may retain halibut and receive money for that sale that previously would not have been permitted.</td>
</tr>
<tr>
<td>Effort Controls</td>
<td>See input controls.</td>
</tr>
<tr>
<td>Electronic Monitoring (EM)</td>
<td>A form of at-sea monitoring that uses a combination of cameras, GPS, and sensors to record fishing activity while at sea.</td>
</tr>
<tr>
<td>Fleet</td>
<td>A group of vessels. For the purpose of this thesis, fleet refers to the aggregate of all commercial groundfish fishing vessels.</td>
</tr>
</tbody>
</table>
Guiding principles

In 2003, DFO announced five guiding principles for the future management of the commercial groundfish fisheries:

1. All rockfish catch must be accounted for; 2. rockfish catches will be managed according to established rockfish management areas; 3. harvesters will be individually accountable for their catch; 4. new monitoring standards will be established and implemented to meet the above three objectives; 5. species of concern will be closely examined and actions such as reduction of TACs and other catch limits will be considered and implemented to be consistent with the precautionary approach for management.

Harvest

The act of catching fish.

Harvesters

Those persons engaged in the act of catching fish. Also known as fishermen/fisherwomen.

Integrated Fisheries Management Plan (IFMP)

The Integrated Fisheries Management Plan, developed annually by DFO; the IFMP outlines the objectives and management measures for each commercial fishery.

Impacts

For the purpose of this thesis, this term refers to the impacts of the CGIPP. These impacts are compared to the relative impacts that may have occurred under the AFP.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidental Catch</td>
<td>The catch of species, other than the intended or targeted or directed species. For example, a halibut harvester intends (or directs or targets) halibut when fishing, however inevitably the gear will also catch other species. This is referred to as incidental catch and is also known as by-catch or non-directed catch.</td>
</tr>
<tr>
<td>Input Controls</td>
<td>Also known as effort controls. Relate to the fishing effort and the gear used, and to the permissible time and place that fishing may take place</td>
</tr>
<tr>
<td>Inside Rockfish</td>
<td>See ZNI.</td>
</tr>
<tr>
<td>Individual Transferable Quota (ITQ)</td>
<td>The subdivision of a TAC into tradable shares to each commercial groundfish licence holder at the beginning of each season that are transferable between commercial groundfish licences.</td>
</tr>
<tr>
<td>Landings</td>
<td>The sum of the fish that are caught, retained, and brought to shore.</td>
</tr>
<tr>
<td>Legal Size</td>
<td>The regulatory size limit of fish that may be retained by a harvester when fishing. Anything under this size limit is considered sub-legal and must be released. This most often is related to the maturation sizes of fish species.</td>
</tr>
<tr>
<td>Licence categories</td>
<td>Types of commercial fishing licences. For example a halibut licence is category “L,” a sablefish licence is category “K,” etc.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
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</tr>
<tr>
<td>Limited Entry</td>
<td>Limiting the number of licences permitted to participate in a fishery.</td>
</tr>
<tr>
<td>Licensing</td>
<td>The various components associated with managing fisheries. Examples include establishing TACs, developing allocation policies, implementing catch monitoring, etc.</td>
</tr>
<tr>
<td>Management Tasks</td>
<td>The management measures used to ensure the sustainable harvest of fish resources. Also referred to as control measures or management measures.</td>
</tr>
<tr>
<td>Management Techniques</td>
<td>The number of fish lost. It is assumed that a percentage (if not all) of fish that are caught and released at sea will die. A rate associated with the probability of this mortality is referred to as a mortality rate. These rates vary mostly by species and gear used.</td>
</tr>
<tr>
<td>Multi-Species Fishery</td>
<td>A fishery where more than one species is targeted or intercepted.</td>
</tr>
<tr>
<td>Outside Rockfish</td>
<td>See ZNO.</td>
</tr>
<tr>
<td>Overcapitalization</td>
<td>Investment in capital expenditures (i.e.: vessel improvements) in excess of what is required to make a profit.</td>
</tr>
<tr>
<td>Pacific Coast</td>
<td>The Canadian region, British Columbia, which is bound by the Pacific Ocean.</td>
</tr>
<tr>
<td>Party based licence</td>
<td>A commercial fishing licence that is attached to a person or company. The rockfish licences (ZN) are party based.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
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</tr>
<tr>
<td>Permanent Quota</td>
<td>ITQ that can be permanently reallocated from one commercial licence to another.</td>
</tr>
<tr>
<td>Person Year</td>
<td>An employment measure that uses the total number of hours a person is employed instead of the total number of persons employed.</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
</tr>
<tr>
<td>Pacific Integrated Commercial Fisheries Initiative (PICFI)</td>
<td>Announced by DFO in 2007, the initiative is aimed at supporting First Nations’ aspirations of being more involved in commercial fisheries while at the same time ensuring environmentally sustainable and economically viable commercial fisheries.</td>
</tr>
<tr>
<td>Processors</td>
<td>Those companies that prepare fish for human consumption</td>
</tr>
<tr>
<td>Profitability</td>
<td>The gains associated with a business operation (revenue minus costs). For the purpose of this thesis, profitability refers to the making of gains associated with harvesting commercial groundfish species.</td>
</tr>
<tr>
<td>Quota Species</td>
<td>Those commercial groundfish species that have a TAC and ITQs. For the purpose of this thesis, quota species include some rockfish species, halibut, sablefish, lingcod, and dogfish.</td>
</tr>
<tr>
<td>Race for Fish</td>
<td>Behaviour of harvesters that results from each harvester trying to catch his share of the TAC before another harvester and before the TAC is reached. This often occurs when there is a TAC with no ITQs.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<td>-------------------------------</td>
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</tr>
<tr>
<td>Rationalization</td>
<td>A decrease in the number of active fishing vessels. A reduction of fishing capacity.</td>
</tr>
<tr>
<td>Releases at-sea</td>
<td>A term used to described fish that are discarded instead of being retained when fishing.</td>
</tr>
<tr>
<td>Season</td>
<td>Refers to the start and close date of a commercial fishery.</td>
</tr>
<tr>
<td>Single Species Management</td>
<td>A fishery where only one species is targeted and only one species is the focus of management measures.</td>
</tr>
<tr>
<td>Stakeholders</td>
<td>Those parties interested in the management of fisheries who are often included in the consultative arrangements established by DFO. These parties include all sectors such as recreational, environmental, commercial, etc.</td>
</tr>
<tr>
<td>Stock</td>
<td>Subpopulations of a particular species of fish.</td>
</tr>
<tr>
<td>Total Allowable Catch (TAC)</td>
<td>A total amount of a particular species of fish that may be harvested in a single season.</td>
</tr>
<tr>
<td>Target Species</td>
<td>The species of target when fishing. Also known as directed species. For example, a halibut harvester’s target species is halibut.</td>
</tr>
<tr>
<td>Temporary Quota</td>
<td>ITQ that may be temporarily reallocated to another commercial licence holder in a season, but returns to the original owner at the beginning of the following season.</td>
</tr>
<tr>
<td>Terms of Reference (TOR)</td>
<td>The TOR outlines the purpose, structure, and often the operating procedures of advisory/co-management processes.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------</td>
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</tr>
<tr>
<td>Transferability</td>
<td>The ability to permanently or temporarily transfer ITQ for any species to any commercial groundfish licence.</td>
</tr>
<tr>
<td>Trip limits</td>
<td>The maximum amount of a species of fish that may be retained on one fishing trip</td>
</tr>
<tr>
<td>Vessel-based licence</td>
<td>A commercial fishing licence that must be attached to a vessel. For example, halibut is a vessel-based licence.</td>
</tr>
<tr>
<td>Wholesale Value</td>
<td>The value of the fish after processing.</td>
</tr>
<tr>
<td>ZN Inside or Rockfish Inside</td>
<td>A rockfish inside licence permits a harvester to harvest rockfish in the Strait of Georgia.</td>
</tr>
<tr>
<td>ZN Outside or Rockfish Outside</td>
<td>A rockfish outside licence permits a harvester to harvest rockfish anywhere on the Pacific Coast (as defined above) except the Strait of Georgia.</td>
</tr>
</tbody>
</table>
Appendix B  
Commercial Groundfish Integrated Advisory Committee (CGIAC)  
Terms Of Reference  

Purpose  
The Commercial Groundfish Integrated Advisory Committee (CGIAC) provides formal advice and makes recommendations to Fisheries and Oceans Canada on policy and operational matters that impact across commercial groundfish fisheries and between commercial groundfish fisheries and other sectors or resource users in Pacific Region. The CGIAC will also provide direction to the Commercial Industry Caucus (CIC) and appointed sub-committees regarding priorities and initiatives. The CGIAC is a result of the Department’s commitment to address overarching issues impacting the proper care and management of the groundfish resources and the long-term economic viability of the commercial groundfish fisheries. The CGIAC will focus on developing a management direction that enables government and industry to achieve the numerous objectives identified in the June 2003 Discussion Paper entitled “Future Direction of the Commercial Groundfish Fisheries in British Columbia” (Pacific Fisheries Management Inc., 2003) and identified below.

Core Objectives  
Elaboration on the following objectives by the CGIAC will guide the committee in its work to develop a long-term management direction for the commercial groundfish resource and fisheries. All of these objectives are related to and support sustainable use of the resource and promote greater self-reliance of resource users, leading to a more resilient and economically viable fishing industry.
Conservation: To ensure conservation of and sustainable production from the various groundfish resources through the application of management principles that balance risk to the resource and risk to the fisheries in a precautionary manner based on the best scientific advice available.

Social and Economic Benefits: To provide economic and employment benefits to BC communities and the province as a whole through the catching, processing and distributing components of the fishery. To improve landed catch quality, final product value and manage fisheries in a manner that is sensitive to the needs of markets and end consumers e.g. serve markets in a consistent and timely manner.

Accountability: To accurately and publicly account for the catch and landings of the commercial groundfish fishery, the total mortality of all species in the fishery, the ecosystem impacts of the fishery, and the performance of the fishery in meeting publicly-defined ecological, economic, social and cultural objectives.

Improved research and assessments: To develop a research program that enables industry and government to assess the relative health and abundance of groundfish species and stocks and guides managers in the development of sustainable management plans.

Security of access: Provide commercial licence holders with stable arrangements for longer periods of time, employ open, transparent and rules-based decision-making processes, and develop mechanisms to allow for orderly access and allocations.

Comprehensive management: To develop a more comprehensive and integrated approach to the overall management of groundfish fisheries.

Improved catch utilization: To develop and implement measures to improve utilization of catches and reduce the level of at-sea releases.
Individual accountability: To ensure commercial groundfish licence holders are held individually accountable for what they harvest (land and discard).

Increased contribution to management costs: To have industry and government share in the costs associated with the management of groundfish resources through co-management arrangements.

Increased industry responsibility: To have industry assume increased responsibility and public accountability for operational activities necessary for the sustainable management of the commercial groundfish fisheries.

Economic viability and efficiency: To provide for an economically viable, self-sustaining, and efficient commercial groundfish fishery that can support the costs of harvesting and the costs of management.

Administrative and operational simplicity: Simplify the rules and regulations governing the fishery and apply common sense principles.

Guiding Principles

The following principles will guide the committee and participants in carrying out their work:

Accountability

Members of the CGIAC and participants of the CGIAC process are accountable to both the process and their constituents. They are expected to bring to the discussions the views, knowledge and experience of those whom they represent, and promote awareness and understanding within their constituencies about deliberations of the Committee and reasons for decisions taken. Committee members will also be encouraged to seek support for consensus-based agreements formed in the Committee.
Policy Framework

Established policies and legal and fiduciary parameters influencing and affecting groundfish management will guide the CGIAC in its deliberations. Examples of existing policies include international agreements to which Canada is a signatory such as the UN-FAO Code of Conduct for Responsible Fisheries and its related international plans of action, and other national and regional policies such as Selective Fishing in Canada’s Pacific Fisheries, the Pacific Fishery Monitoring and Reporting Framework and the New and Emerging Fisheries Framework.

Balance and Representation

It is important that advice received by the Department reflect the experience and knowledge of a valid cross-section of interests in the groundfish fisheries. A balance of interests must be achieved while striving for a number of representatives from each interest that will be sufficient to provide valuable and effective advice, yet not so many as to make discussion unnecessarily difficult. The dialogue will be advice-driven and knowledge-based rather than positional or sector-based.

Economy and Efficiency

Membership numbers, meeting schedules, the use of technology and the use of experts will all be considered with the intent of keeping costs and inconvenience to a minimum while achieving effectiveness and efficiency in developing advice regarding the management of groundfish resources and commercial groundfish fisheries.

Transparency

There will be transparency throughout the process based on open lines of communication and the provision of timely, accurate, clear and objective information.
Mandate
The CGIAC has a mandate to provide formal advice and recommendations to Fisheries and Oceans Canada on the future management of the groundfish fisheries in British Columbia, long-term direction, and overarching policy issues affecting commercial groundfish fisheries in the Pacific Region. The CGIAC will also provide direction to the Commercial Industry Caucus (CIC) and appointed sub-committees regarding priorities and initiatives.

Organization
The CGIAC will have 21 members, including 1 United Fishermen and Allied Workers Union (UFAWU), 1 First Nations, 1 Sport Fish Advisory Board (SFAB), 1 conservation group (Sierra Club), 1 coastal community representative and the Commercial Industry Caucus (CIC) made up of 16 commercial fishery representatives. The Commercial Industry Caucus will be composed of 2 processing (1 trawl and 1 hook and line) and 14 licence holder representatives (2 from each of the groundfish trawl, sablefish, halibut, rockfish outside, rockfish inside, lingcod and dogfish fisheries). An alternate member will be identified for each processing member, one for each fishery and one for every other member. The alternate member may participate in the CGIAC meetings when the member is not present. In addition, representatives of the DFO and the provincial Ministry of Agriculture, Food and Fisheries and may participate in CIC meetings when guidance or technical support is requested.

The Committee will be co-chaired by a non-government representative as chosen by the members of the committee, and a DFO co-chair as identified by the Department. Observers may be permitted to attend meetings at the invitation of the CIC.
Separate sub-committees may be struck as needed with the full agreement of the Committee, but will normally be short-term and task-specific oriented (i.e. security of access, catch monitoring, stock assessment framework, cost recovery, etc.). The product of the subcommittee proceedings will be provided to the CGIAC as a whole for development of advice and recommendations to DFO.

Procedures

The CGIAC will meet as required. The CGIAC will work towards developing recommendations through consensus. Consensus is a process for making decisions, in this case decisions on what recommendations to put forward, without the power of voting. Consensus does not require that everyone be in complete agreement, but only that all will be willing to accept a decision or withhold taking a position against a decision. In reaching a decision no one should feel that her/his position on the matter was misunderstood or not heard. Consensus, though the most persuasive form of recommendation, is not essential for providing CGIAC advice. In the event CGIAC is unable to achieve consensus on major issues the co-chairs will record and report alternate views, opinions, and interpretations. Meeting materials, including documents to be discussed and agendas for meetings will be distributed to participants well in advance of scheduled meetings. Meeting notes will be taken, and a summary of the meeting will be provided to all members.

Code of Conduct

Individuals’ decision to participate in consultation processes is accompanied by responsibilities. Parties that participate in consultation processes should do so in good faith and with the public interest in mind. Participants also have a responsibility to
engage in effective, balanced and civil communication. All representatives have a responsibility to ensure that they are accountable to their constituents, that they bring the information necessary for well-informed and balanced decisions, and that consultation processes operate as efficiently as possible.

Members of the CGIAC and related subcommittee processes should:

1. Maximize the exchange of information among parties and minimize misunderstandings by:

   • speaking clearly, listening carefully and asking for clarification if a point is not understood;
   • sharing information related to the issues at hand;
   • stating concerns about other participants or the process openly and directly; and clearly explaining what is important to them and why; and
   • stating their perspective as concisely and briefly as possible.

2. Ensure that all participants have the opportunity to speak and all perspectives are taken into account by:

   • seeking the participation of all interests; and
   • providing opportunities for affected parties to be heard before making a decision.

3. Maintain a respectful atmosphere by:

   • respecting each others’ values and interests;
   • avoiding accusatory language, rude behaviour and stereotyping;
   • listening to what others have to say without interrupting;
   • beginning meetings on time; and
• seeking a better understanding of other perspectives with an open mind.

4. Ensure accountability to constituencies by:

• making every effort to attend all important consultation meetings, or sending an alternate as set out in the terms of reference;

• establishing clear lines of accountability with those they represent, and with other representatives;

• acting in accordance with the authority granted by constituents and ensuring that other representatives understand this authority;

• communicating pertinent information to their constituencies regularly and seeking support for negotiated agreements;

• acting quickly to raise and resolve any concerns regarding the accountability of the process or any of the representatives to protect the integrity and trust of the group.

5. When negotiating in a consultation process, facilitate agreements across the full spectrum of interests by:

• negotiating in good faith, building as much agreement as possible;

• avoiding participation in activities that may undermine the negotiation;

• focusing on underlying interests or objectives rather than positions and seek to understand the interests of others;

• recognizing the legitimacy of all interests;

• treating issues as problems to be solved not as personal or sectoral conflicts;
• allowing representatives the freedom to test ideas without prejudice to future discussion or negotiations — do not hold tentative suggestions or agreements against those who made them;
• seeking creative solutions that accommodate all interests; and
• positively supporting consensus agreements once they have been reached.

6. Engaging in appropriate external communication by:

• ensuring that descriptions of the process and the views of other representatives are accurate and acceptable to all representatives before communicating them to the general public or the media; and ensuring that contact with the media is respectful of others.
Appendix C
Commercial Industry Caucus (CIC)
Terms Of Reference

COMMERCIAL INDUSTRY CAUCUS (CIC) TERMS OF REFERENCE

Purpose

The Commercial Industry Caucus (CIC) provides formal advice and makes recommendations to the Commercial Groundfish Integrated Advisory Committee (CGIAC) on policy and operational matters that impact across commercial groundfish fisheries and/or between commercial groundfish fisheries and other sectors or resource users in Pacific Region.

Core Objectives

The objectives guiding the CIC in its work are identical to the core objectives identified for the CGIAC. All of these objectives are related to and support sustainable use of the resource and promote greater self-reliance of resource users, leading to a more resilient and economically viable fishing industry.

Guiding Principles

The following principles will guide the CIC and participants in carrying out their work:

Accountability

Members of the CIC are accountable to both the process and their constituents. They are expected to bring to the discussions the views, knowledge and experience of those whom they represent, and promote awareness and understanding within their constituencies about deliberations of the CIC and reasons for decisions taken. CIC members will also be encouraged to seek support for consensus-based agreements formed by the CIC.

Policy Objective
Established policies and legal and fiduciary parameters influencing and affecting groundfish management will guide the CIC in its deliberations. Examples of existing policies include international agreements to which Canada is a signatory such as the UN-FAO Code of Conduct for Responsible Fisheries and its related international plans of action, and other national and regional policies such as Selective Fishing in Canada’s Pacific Fisheries, the Pacific Fishery Monitoring and Reporting Framework and the New and Emerging Fisheries Framework.

Balance and Representation

It is important that advice received from the CIC reflect the experience and knowledge of a valid cross-section of interests in the groundfish fisheries. A balance of interests must be achieved while striving for a number of representatives from each interest that will be sufficient to provide valuable and effective advice, yet not so many as to make discussion unnecessarily difficult. The dialogue will be advice-driven and knowledge-based rather than positional or sector-based.

Economy and Efficiency

Membership numbers, meeting schedules, the use of technology and the use of experts will all be considered with the intent of keeping costs and inconvenience to a minimum while achieving effectiveness and efficiency in developing advice regarding the management of groundfish resources and commercial groundfish fisheries.

Transparency

There will be transparency throughout the process based on open lines of communication and the provision of timely, accurate, clear and objective information.

Mandate
The CIC has a mandate to provide formal advice and recommendations to the CGIAC on the future management of the groundfish fisheries in British Columbia, long-term direction, and overarching policy issues affecting commercial groundfish fisheries in the Pacific Region.

Organization

The Commercial Industry Caucus will be composed of 2 processing (1 trawl and 1 hook and line) and 14 license holder representatives (2 from each of the groundfish trawl, sablefish, halibut, rockfish outside, rockfish inside, lingcod and dogfish fisheries). An alternate member will be identified for each processing member and one for each fishery. In addition, DFO and the provincial Ministry of Agriculture, Food and Fisheries and Food will be ex-officio members and may participate in CIC meetings when guidance or technical support is requested.

The CIC will be chaired by a non-government representative as chosen by the members of the CIC.

Observers may be permitted to attend meetings at the invitation of the CIC

Procedures

The CIC will meet as required.

CIC advice and recommendations shall be consensus based. Consensus is a process for making decisions, in this case decisions on what recommendations to put forward, without the power of voting. Consensus does not require that everyone be in complete agreement, but only that all will be willing to accept – consent to – a decision. In reaching a decision no one should feel that her/his position on the matter was misunderstood or not heard.
Meeting materials, including documents to be discussed and agendas for meetings will be distributed to participants well in advance of scheduled meetings. Meeting notes will be taken, and a summary of the meeting will be provided to all members.

Code of Conduct

Individuals’ decision to participate in consultation processes is accompanied by responsibilities. Parties that participate in consultation processes should do so in good faith and with the public interest in mind. Participants also have a responsibility to engage in effective, balanced and civil communication. All representatives have a responsibility to ensure that they are accountable to their constituents, that they bring the information necessary for well-informed and balanced decisions, and that consultation processes operate as efficiently as possible.

Members of the CIC should:

1. Maximize the exchange of information among parties and minimize misunderstandings by:
   
   • speaking clearly, listening carefully and asking for clarification if a point is not understood;
   • sharing information related to the issues at hand;
   • stating concerns about other participants or the process openly and directly; and clearly explaining what is important to them and why; and
   • stating their perspective as concisely and briefly as possible.

2. Ensure that all participants have the opportunity to speak and all perspectives are taken into account by:

   • seeking the participation of all interests; and
• providing opportunities for affected parties to be heard before making a
decision.

3. Maintain a respectful atmosphere by:

• respecting each others’ values and interests;
• avoiding accusatory language, rude behaviour and stereotyping;
• listening to what others have to say without interrupting;
• beginning meetings on time; and
• seeking a better understanding of other perspectives with an open mind.

4. Ensure accountability to constituencies by:

• making every effort to attend all important consultation meetings, or sending an
alternate as set out in the terms of reference;
• establishing clear lines of accountability with those they represent, and with
other
representatives;
• acting in accordance with the authority granted by constituents and ensuring that
other representatives understand this authority;
• communicating pertinent information to their constituencies regularly and
seeking
support for negotiated agreements;
• acting quickly to raise and resolve any concerns regarding the accountability of
the process or any of the representatives to protect the integrity and trust of the
group.

5. When negotiating in a consultation process, facilitate agreements across the full
spectrum of interests by:

• negotiating in good faith, building as much agreement as possible;

• avoiding participation in activities that may undermine the negotiation;

• focusing on underlying interests or objectives rather than positions and seek to understand the interests of others;

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• ensuring that contact with the media is respectful of others.